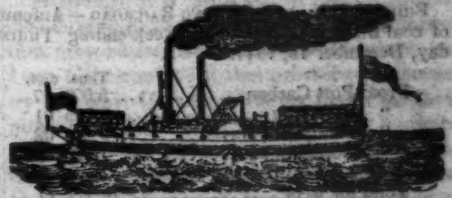
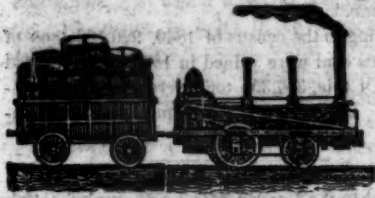


# AMERICAN RAILROAD JOURNAL, AND GENERAL ADVERTISER

FOR RAILROADS, CANALS, STEAMBOATS, MACHINERY

AND MINES.



ESTABLISHED 1831.

PUBLISHED WEEKLY, AT No. 105 CHESTNUT STREET, PHILADELPHIA, AT FIVE DOLLARS PER ANNUM.

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SATURDAY, DECEMBER 25, 1847.

[WHOLE No. 601, Vol. XX.

Correspondents will oblige us by sending in their communications by Tuesday morning at latest.

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## AMERICAN RAILROAD JOURNAL.

PUBLISHED AT 105 CHESTNUT ST. PHILADELPHIA.

Saturday, December 25, 1847.

**T. & C. WASON**, Manufacturers of every style of Freight and Baggage Cars.—Forty rods east of the depot, Springfield, Mass.

Running parts in sets complete, Wheels, Axles, or any part of cars furnished and fitted up at short notice and in the best manner.

**N. B.** Particular attention paid to the manufacture of the most improved Freight Cars. We refer to the New Haven, Hartford and Springfield; Connecticut River; Harlem; Housatonic, and Western, Mass., Railroads, where our cars are now in constant use.

Dec. 25, 1847.—1y.

## THE CLOSE OF THE VOLUME.

This number—and the Index, which will soon be ready—will complete the volume—and the *fifteenth* year since the Journal was commenced. The change produced in Europe, and in this country, within that period, by the construction of railroads, though partially visible to the eye, can hardly be estimated.

By referring to the first number of the Journal—dated January 24, 1832—we find that there were then in use the following roads, viz:

Baltimore and Ohio.....	61 miles.
Albany and Schenectady.....	19 "
Charleston, S. C.....	20 "
Mauch Chunk.....	9 "
Quincy, Mass.....	6 "

Making in this country about.....108 miles, while there was not then half that extent in all Europe completed; whereas now there is in this country at least four thousand five hundred miles in constant use, and about six thousand miles completed in Europe—by which the mode of travelling and the transaction of business is nearly revolutionised.

We find, also, that coal was selling in New York at that time, for *fifteen dollars* a ton! and hickory

wood at *thirteen dollars* a cord!! Whereas, at the present time, the first may be got for \$5.00 to \$6 per ton, and the latter at \$7 per cord, delivered. Then the people of New York paid, in winter, 6 to 8 cents a quart for milk, but now they get a better article for 4 to 5 cents. The evidence, of the advantage of railroads, to the people of New York, may be inferred from the amount of a single article carried on the New York and Erie road, during the past year, viz: *ten million quarts of milk*—which at the former average price, six cents, would be \$600,000, and at the present average price, 4 cents, the saving, on what passes over this road alone, will be \$150,000 a year—but, as not more than one-third, if even that proportion, of the milk used in the city comes by this line, the aggregate of economy to the people of New York, on milk alone, one of the smallest items of expense of house-keeping, is over \$450,000 a year!! But New York is not alone. If such are the advantages to New York, from her short lines now in use, how much greater will they be when her roads, now under way, shall be completed.

So with Boston, Philadelphia, Baltimore, Richmond, and other cities, as well as the vast interior of our wide spread country, are just beginning to derive the advantages of the railroad system; and, therefore, we may look for an extension of it, during the ensuing fifteen years, scarcely anticipated now, even by the most sanguine; and may we not venture to hope that the *RAILROAD JOURNAL* will grow with the growth, and strengthen with the spread, of the system?

## A WORD TO ALL.

**Missing Numbers.**—We again remind our subscribers that we shall cheerfully supply missing numbers for the current and past volumes—if we have them to spare—on receiving a list. It is much more easy to supply them now than at any future period.

If we have omitted to comply with any of the applications heretofore made for missing numbers, it has arisen from inability at the time—not from indisposition—it may therefore be worth the labor of furnishing a new list, as we have received many loose numbers of back volumes, from which they may possibly be supplied.

We learn, from the *Detroit Advertiser*, that the Central railroad company have determined to build, during the winter, a steamer to run between Detroit and Buffalo, in connection with the road. The boat

is to be of 1000 tons burthen, and built expressly for speed and strength.

## Novel Speculation.

A mercantile house at Berlin has proposed to all the railway companies of Germany to supply all their carriages with silk blinds for nothing. They simply propose to reserve to themselves the right of changing the blinds as often as they please, and they require the companies to engage themselves not to accept, during fifty years, either for money or gratuitously, any blinds but theirs. Their object is to cover the blinds with advertisements.

## Baltimore and Ohio Railroad.

Engineer's and Superintendent's Report.

We complete, in this number, this able and useful report, with the exception of the tables.

From this report it appears that the *plate rail* east of Harper's Ferry, is fast disappearing—and the *fl* rail is laid in its stead, a measure highly important, as will be seen by the tabular statement, showing the comparative cost of keeping the road in repair. There appears to have been a great care given to the business of the road, and to the classification of the expenses of working it. The comparative cost, of repairs of locomotives, appears to be decidedly in favor of those termed first and second class, or the heavy engines. The same may be said of the expense of working them.

This report may be profitably consulted by all who are engaged in the management or construction of railroads.

## Gauge Question.

We complete, in this number, Mr. Morton's able report on this question. It has been divided into several parts, to avoid filling up two or three numbers with one subject; yet it is completed in this volume, and may therefore be referred to, when bound, without inconvenience.

Mr. Morton has labored with industry and ability to establish his positions, and has been successful with his directors, who have adopted the 5 1/2 feet gauge. The New York and Erie company have also decided to continue their work on the original—six feet—gauge; and Mr. Brunel has succeeded in extending his favorite—seven feet—gauge, from Gloucester in the direction of Birmingham, by means of the "mixed gauge," or three rail track, by which both the broad and narrow gauge trains can pass over the line. Upon this road, if upon any, we should think this vexed question might be thorough-



ly tested, as the grades, curves and construction of the road are the same. Now let the best engines of the different gauges be placed in the hands of disinterested persons, who will give them a fair trial, without regard to the makers, or railroad companies, and then make a full report. Not that such a course will bring about a *uniformity*, and remove the difficulty of the present diversity, of gauge, but it will enable those who hereafter construct roads in the new States to adopt the most useful width.

#### Schuylkill Coal Trade.

PHILADELPHIA AND READING RAILROAD—Amount of coal transported during the week ending Thursday, December 16, 1847.

	Tons, cwt.
From Port Carbon.....	5,578 17
" Pottsville.....	2,095 01
" Schuylkill Haven.....	9,871 08
" Port Clinton.....	1,826 15
Total for week.....	19,371 11
Previously this year.....	1,307,083 07
Total.....	1,326,454 18

#### Bituminous Coal—The Moshannon Basin.

The importance of the coal trade of Pennsylvania is just beginning to be appreciated—though still quite in its infancy—yet there are very few indeed on this side of the mountain, who know anything of the riches of the bituminous coal fields of the State.

Much has been said of the bituminous coal fields of Maryland and Virginia, and sometimes those of Ohio are spoken of—but there is comparatively little known to us—who are so familiar with the anthracite—about the much more extensive regions of bituminous coal in the interior of the State, for the reason, we suppose, that there has been no cheap and easy mode of getting it to an eastern market. The time is not distant, however, we hope, when there will be a supply of this very desirable article in all the Atlantic cities; that those who prefer the cheerful blaze of bituminous coal to anthracite, may have it at a reasonable rate. There is a fair prospect, we infer, from the following communication, that there will soon be an opening to the Moshannon basin—which we understand to be the easiest of access from this side of the Allegheny mountain—from which an ample supply may be obtained through the medium of the Pennsylvania canals and the Central railroad, by the construction of a branch of only ten miles. This branch may be made probably for less than \$10,000 a mile—and, when made, will be profitable to its stockholders, if the coal mines are—as they surely will be—properly worked; and we shall feel that we have done good service to the many, if we can be in any way instrumental in directing attention to the subject, and of getting the coal into the market—but to the remarks of X. Y. Z.

For the American Railroad Journal.

#### The Moshannon Bituminous Coal Basin.

This is the most eastern of the series of bituminous coal basins, which, lying on, and west of the Allegheny mountain, extend through Pennsylvania down to the Gulf of Mexico. As its centre coincides very nearly with the course of the Moshannon creek in Centre and Clearfield counties, the strata on each side dipping gently towards the stream, it may, for convenience, be called the "Moshannon Bituminous Coal Basin."

The coal of the many veins of this basin differs. The structure of some is columnar, the strata distinct, lustre jet black and shining; others are massive, with an irregular fracture. It is generally of a sound texture, and will afford solid blocks of the thickness of the beds, and as much as eight feet long.

The coal from some of the veins is uncommonly free from sulphur and slate, and is exceedingly well adapted to domestic purposes, burning in grates, stoves, etc.; some for the generating of steam, and others for smelting and the making of iron. It kindles easily and quickly; burns with a bright blaze; has very little ashes, and gives off but little or none of the soiling black smoke of the Liverpool and other bituminous coals. In the production of a bright beautiful fire, combining heat, cleanliness, cheerfulness, ease of kindling, length of burning without replenishing, it is unrivalled. It yields as pure a coke as any known coal.

There is one vein of nine feet thickness; two of six; one of four feet four inches; one of four feet, and several others.

The dip is so slight as to afford uncommon facilities for mining. It is now mined in considerable quantities at a very small cost. Drifts are cut into the sides of the hills at such an angle as will allow of just sufficient fall for draining. The veins are all level free, i.e., they drain themselves: thus avoiding the great expense incurred in some districts in raising both the coal and water by steam power.

The veins of coal are interstratified with limestone, iron ore, fire clay, slate and sandstone. A brown iron ore is found loose in the fields over a large extent of country.

The Moshannon coal basin may be considered to be from twenty-five to thirty miles in length, and seven to nine in breadth. Its southern boundary, however, is not well defined, as it runs into the Clearfield basin; which in like manner unites with others southwesterly.

In quantity the coal is inexhaustible. This one basin will afford a supply for any demand that will probably exist for many centuries.

The coal veins along the southeast side of the basin, near the top of the mountain, do not correspond exactly with those above described. They have been developed in the dividing ridge, called "Coal Hill," between the Cold Stream and Trout Run; streams flowing into the Moshannon. This elevation slopes gently from the west side of the Allegheny, opposite to both "Emigh's Gap" and "Miller's Gap;" the former being the lowest depression of the Allegheny range.

The seams of coal in Coal Hill have been estimated to occupy as much as sixteen square miles of surface in the country between Trout Run and Cold Stream. Its position is exceedingly advantageous, as the PENNSYLVANIA RAILWAY, now constructing, will approach within ten miles of its mines. By this means this vast bituminous coal basin will soon be open to the Atlantic markets. A railway of ten miles in length, with grades all descending towards the Juniata river, and fifteen miles, or less, of the Pennsylvania railway, will enable the coal to be loaded into boats of 80 tons burden, on the Juniata canal at Petersburg, in Huntingdon county. The route will be, from "Coal Hill" to Petersburg, 25 miles, by railway; thence, 183 miles to *Havre de Grace*, by the Juniata, Susquehanna, and Tide Water canals. The completion of the Pennsylvania railway to Logan's Narrows, and the construction of the branch of ten miles, will, it is believed, render the Moshannon coal field equally if not more accessible to tide water than any other bituminous coal in the United States. The facilities for mining are such, and the advantages of its position are so great, that it will probably be sold at a lower rate in the cities of the seaboard than any other coal of its class.

A variety of circumstances has caused the anthracite coal basins of Pennsylvania to attract much at-

tention, while the bituminous coal fields have scarcely been noticed. Much has been said in vague terms of the great mineral wealth of the State; but comprehensive and accurate knowledge on the subject is rare. The statistics of anthracite coal have been industriously collected and extensively published; those of bituminous are known to but few. It is thought that it will not be one of the least of the benefits which will accrue from the Pennsylvania railway, that it will bring to public view and use the vast undeveloped resources of the "MOSHANNON COAL FIELD."

According to the census of 1840, 920,106 tons of bituminous coal were mined in 1839 in the United States. Of this, 387,355 tons were mined in Pennsylvania. Since then the amount has greatly increased. X. Y. Z.

#### Cast Iron Rails.

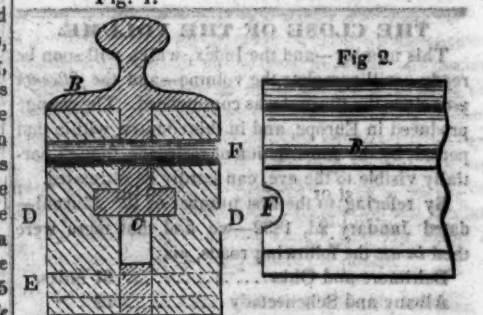
We find in the London Mining Journal, for 12th August, the following description and illustration of a cast iron rail, invented and patented in this country by Mr. Richard Imlay, of New York, and in England by Mr. Egbert Hedge. There have been, and are now, serious objections to the cast rail, arising from the belief that they are not safe; and therefore they have not had, as we think, a fair trial.

This plan, it will be seen, is different from any that has been tried before. The rail has not only a broad bearing upon the wood, but it is also confined between two pieces in such a way that, even if it should break, it cannot get out of place, and the trains will pass as safely over them when in short pieces as in whole lengths; but they are not very liable to break, as we had an opportunity to learn recently, by examining the Harlem railroad in New York, between 28th and 30th streets, where they have been in use more than a year, not only subject to the passing of trains on, but also of loaded carts across, them, without a single fracture that we could see.

Being without the figures, we cannot give the comparative cost of this description of road; yet we consider the plan deserving consideration, and therefore ask for it the attention of our readers.

(Specification of patent granted to EGBERT HEDGE, No. 9 Howard street, in the parish of St. Clement's Dunes, Middlesex, gentleman, for certain improvements in rails for railroads, and in the manner of securing them.)

Fig. 1.



This invention consists, first, in a new form and construction of rail; and, secondly, in the mode of securing such rails to their longitudinal sleepers, by imbedding the lower portion of the entire length of each rail in sleepers, grooved to receive such part in the manner exhibited by the drawing in Fig. 1, which represents a transverse and vertical section of a rail and sleepers. It will be seen upon referring to this figure, that the rail is formed with (what the inventor terms) an upper table (B) and under table (C), and that the shoulders of the upper table rest upon the upper edge of each of the longitudinal timbers (DD),



which have grooves formed therein, and extending throughout the entire length of each sleeper, for the purpose of receiving that portion of the rail termed the under table (C), which, when placed therein, is firmly secured in this position, by pins or keys (E) being passed through holes in the sleepers, as shown at Fig. 2. At the points of junction of each length of rail, the inventor proposes making the upper table (B) of the rail wider than the other part; and there are 'half-round' holes (F) formed at the ends of each rail, which, when brought together, form an entire hole, into which a pin or key (G) is passed, the ends resting in holes in the sleepers (DD), as shown. This arrangement, whilst it serves to connect each length of rail together, allows it lateral movement for expansion and contraction. The inventor proposes employing rails of cast iron, except at those parts of a line of railway where crossings are required, in which case he proposes to employ wrought iron rails of the ordinary form, and laid in the usual manner. The inventor claims—firstly, a rail, with an upper and under table and shoulders, as described. Secondly, the clamping of rails in sleepers, grooved and keyed, as described. Thirdly, the combination of rails and sleepers as described.

*Patent Office & Designs Registry*

210, Strand, August 18.

#### Rolls for Rolling Iron.

The following is the plan and patent of Thomas Payne, of Wandsworth, England, for improvements in rolls for rolling mills. It is from the London Mining Journal. He says—

"The invention relates to improvements in the mode of rolling iron and other metals. In constructing rolls for such purposes, it has heretofore been used to cast rolls with necks, or axles at their ends, such necks or axles being liable to be broken when in use; and it has also been attempted to cast rolls on to bars of iron, such rolls of iron being intended to strengthen the axles or necks of the rolls; but in all such cases the inventor states that bars of iron so used are much injured, being weakened, and unfit for such purposes; but in order that the important peculiarities of his invention may be more fully understood, he has given (which he believes to be) the present mode of manufacturing the rolls aforesaid, that is to say—in carrying his invention into effect, the inventor states that in casting rollers, of any given size required, it will be necessary to leave the interior of any such roller hollow, so as to admit of the shaft or axis being passed through, and fixed therein by keys or otherwise; care being taken in casting, that the hollow space within a roller is cast or formed truly, so that the shaft when introduced shall fit accurately; allowing spaces for driving in wedges or keys at the end of the roll, which keys should be securely retained from moving by shrinking wrought iron collars on the shaft or axles; the working journals are turned in the wrought iron shafts, after keying on the rolls, and the surfaces of the rolls turned; by which means of manufacturing rolls for rolling iron and other metals the inventor is enabled to obtain them with stronger necks or axles. The wrought iron shafts or axles are passed through hollow rolls, which the inventor prefers to be cylindrical openings in the cast iron rollers, but the inventor does not confine himself thereto, as other shapes may be used; but he

claims the manufacture of hollow cast rolls for rolling iron and other metals, and fixing thereunto wrought iron shafts or axles, as hereinbefore described."

#### Gauge, or Width of Track for Railroads. Report on the Gauge for the St. Lawrence & Atlantic Railroad. By A. C. Morton, Esq., Chief Engineer.

Continued from page 808.

An able advocate of this road in a document published in Boston, after dwelling upon the difficulties of the navigation of the St. Lawrence below Ogdensburg, the objections to the canals, and the importance of the trade of the upper province, observes, "for these reasons the Ogdensburg route to Boston would have a decided preference over the Montreal route to Portland. But if the western trade can go by Montreal at all, and is permitted to go there, then there is no probability that Boston would take any share of it. Preference of course would be given to the British carrying trade so far as legislation could do it, and if any portion of it must find an outlet at an American port, no doubt Portland would be the place."

From this it appears that if the trade of the upper province is permitted to go down the St. Lawrence river, or through our canals, it would, in that case, not be likely to reach that American port, but would find its way to the ocean in British vessels.

It has been suggested that the Ogdensburg road would not materially affect the business of the canals; for the construction of a road from Montreal to the boundary line, in the direction of Burlington, connecting with the Ogdensburg road, would open a communication whereby the trade would come through the canals to Montreal and onward to Boston.

It is hardly reasonable to suppose that trade will pass the Ogdensburg road, and take so circuitous a route, going an increased distance of 60 or 70 miles, passing Montreal, and thence in order to reach Boston, return to the same road at lake Champlain.

This is manifestly well understood by the capitalists who have embarked in the construction of the great line to Ogdensburg, and they are fully aware that the trade must be taken by them from the St. Lawrence at Ogdensburg, or the great mass will never reach Boston.

The distance from the St. Lawrence river at Ogdensburg to lake Champlain by the Ogdensburg road, thence over the several lines of railway to the seaboard at Boston, will not differ materially from the distance from the same point by the Saint Lawrence river to Montreal, thence over your road to the seaboard at Portland. The question, therefore, as to which channel of communication the western trade will take to the seaboard seems nicely balanced, and it will preponderate to that route which will furnish the greatest facilities, and the cheapest mode of transportation.

All the rival lines of the States which approach the frontier between Buffalo and Ogdensburg will exert their influence in favor of a narrow gauge in Canada, not because

it is the best, but from the fear of the great superiority of a wider gauge, and their inability in case it is adopted, to compete so successfully in drawing off your trade. The countries are separated by natural boundaries—the great lakes and the St. Lawrence river from lake Superior to St. Regis—and at no point within these limits is it practicable, consistent with the navigation of the river, to connect the railways of the States with those of Canada, except at Niagara Falls.

Although it is proposed to erect a suspension bridge at this point, whereby a connection may be formed with these railways, yet I am fully convinced that no railway company in Upper Canada will ever find it for their interest to allow their cars to cross Niagara river, for the purpose of running over the numerous roads of New York and Massachusetts, a distance of five hundred miles to the seaboard. This, with reasonable economy and despatch, is impracticable. There must, unavoidably be a change, and the probable point would, in this case, be at Niagara river. And I am informed by a person of high standing connected with the lines in Upper Canada that it is not contemplated that their cars, except baggage cars, will run over the roads of New York. I have already shown that there would be no necessity even for this, were the same system of transferring baggage adopted here as on other main lines of the United States. The great business of the roads of Upper Canada will be in connection with your lake, river and canal navigation, and with the roads of the lower provinces.

In deciding on a system of railways for the provinces, which are to co-operate with the river and the canals, in contending against these powerful rivals for the western trade, it becomes a question of vital importance to the people of Canada, that your railways should have a greater capacity than those of your enterprising neighbors.

The St. Lawrence river and its auxiliaries—the stupendous canals of Canada—afford a line of navigation superior to any of your rivals, and should your various chartered railroads be constructed with the same liberal policy as regards capacity which characterize your canals, and the same regard to the great interests of the provinces at large, there need be no apprehension as to your ability to retain your own trade or to compete successfully for that of the lakes.

In this country there is about to be commenced a system of railways which will eventually extend thousands of miles. Already have lines been projected which reach from Halifax to lake Huron, passing the whole extent of the country, connecting your inland seas, rivers and canals, with your Atlantic coast, and joining all the provinces together in one iron band of union and commercial intercourse.

How important is it, therefore, in the commencement of this system, and before any of the links of this great chain are completed and fixed beyond remedy, that the subject of gauge should be definitely determined for all the provinces, and that it should be that which



the experience of every country in which railways have yet been constructed, has been found to be desirable, and above all, that which the position and wants of this country demand?

The question of gauge here is a different one from that in England, and many of the arguments which apply there with much force have no bearing on the subject here.

The agitation of the question there has been not as to the best gauge for an entire new system of railways, but generally a contention between two parties actuated and guided by personal feelings, and strong pecuniary interest, in favor of two extremes, neither of which it is generally admitted is what is wanted.

In recommending a gauge for your road, I have not been guided by a limited or sectional view of the provinces, but in reference to the state of the whole country, its wants and capabilities, and the adoption of such a width of track as experience seems to point out as desirable for a perfect railway.

The width (5½ feet) is not what is termed the narrow or broad gauge, but is such a medium that while it avoids the objections to both extremes it combines all the requisites of a most superior road.

It is such that while it affords to the public the most ample means of communication, superior in all respects to the generality of roads it does not by its greater capacity impose a burden or a tax on the smaller branches or unimportant lateral lines whose business may be less, and whose means of construction are limited.

Your road was regarded as one of great importance, forming part of the main trunk through the provinces; it was the first road commenced (except one of 15 miles length) in the country, and therefore in determining the gauge a great responsibility had to be assumed.

The arguments favoring an increased capacity for your road apply with corresponding force to all the railways of the provinces and it is not now too late to bring about uniformity.

In this view of the case, I would earnestly appeal to the opinions of engineers in England, and to the decision of the British government as furnishing the most full and convincing proof of the position I have maintained.

The experience of English engineers should and must have great weight with us in the discussion of this question, and we should turn our attention to their opinion, as no doubt forming the best grounds for a just estimate of the value of gauge. The question of the best gauge for Ireland was finally settled in 1843 by Major General Paisley, inspector general of railways. He obtained the opinion of engineers and engine-builders of the greatest experience.

The opinions of the 14 gentlemen to whom he addressed his inquiries, showed conclusively that a wider gauge than 4 feet 8½ inches was the best. The average of their opinions was 5 feet 3 inches, and General Paisley decided upon this width, which has been adopted by parliament for Ireland.

Since that date the report of the gauge

commissioners has given us evidence that a still wider gauge than 5 feet 3 in. has advantages over a less width in reference to power and economy.

It is well known that the commissioners in the examination of the subject, came to the conclusion that, under the circumstances, there being 1901 miles of narrow, and only 274 miles of broad gauge, roads in Great Britain in operation, that in future all roads to be constructed should conform to the narrow gauge, and if a uniformity was required among those already constructed, the change should be from the broad to the narrow gauge. This conclusion was arrived at, not from the alleged superiority of the 4 feet 8½ in. gauge, over any intermediate one between it and 7 feet, but as the best means in their opinion of obviating the difficulty of a break of gauge in England.

But in connection with this part of the subject, the commissioners observe, "We are desirous, however of guarding ourselves from being supposed to express an opinion, that the dimensions of 4 feet 8½ in. is in all respects the most suited for the general objects of the country."

The object of the inquiry was solely to devise means whereby under the particular circumstances in which the railways of England were placed, the real or supposed difficulty resulting from a break of gauge, might be remedied, and therefore no opinion was expressed by the commissioners as to the best gauge for a new system of railways in a country where few or none had yet been constructed.

The publication of the testimony taken before the gauge commissioners, brought the whole subject fully before parliament.

This testimony, with singular unanimity of opinion, established the desirableness of a wider gauge than 4 feet 8½ in.

No less than 19 out of 21 persons whose testimony was required on the abstract question as to what gauge was in itself the best gave opinions in favor of a greater width than 4 feet 8½ in. Parliament referred the report of the gauge commissioners to the lords of the committee of privy council for trade.

The board of trade, instead of advising entire uniformity of gauge as recommended by the gauge commissioners, say: "They are unable altogether to concur with the commissioners in the full extent of these recommendations," and further observe: "They would therefore recommend that the lines for which acts have been obtained, but which have not yet been completed; to the south of the line from London to Bristol, should be permitted to be constructed on the broad gauge as originally intended." And again add, "In suggesting therefore (with some exceptions to be specified) the adoption of the recommendation made by the commissioners, that the '4 feet 8½ in.' gauge should be declared by the legislature to be the gauge to be used in all public railways,' hereafter to be constructed in Great Britain,' they do not conceive that any declaration on this point should be understood as positive and final. The working of the wider gauge established in

Ireland, and the future history of railways in other countries, may possibly prove the superiority of some other and intermediate gauge, while the advance of science and the course of experience may point out a practical method of altering an existing gauge, and of easily effecting a great operation which is now generally conceived to be so costly and so difficult as in truth to be impracticable."

The decision of parliament was a full vindication of the opinion of the most skillful engineers and engine builders in the kingdom. And parliament established on their recommendation a gauge of 5 feet 3 in. for Ireland where the question was open and unembarrassed.

The statute of 9 and 10 Vic., cap. 57, enacts, that 5 feet 3 in. shall be the gauge for Ireland, and that all railways southward of the line of the Great Western railway (from London to Bristol) shall be of the gauge of 7 feet, and that those north of this line, excepting certain independent lines and roads connecting with the Great Western, shall be of the gauge of 5 feet 8½ in.

This decision was all that the friends of the broad gauge could reasonably desire, and the deliberate judgment of the British parliament may fairly be considered as adopting a gauge of 5 feet 3 in. as abstractly the best.

Had parliament been called upon at the same time to establish a gauge for the provinces, there is little doubt they would have decided upon a gauge similar to that for Ireland.

The gauge for Canada should be wider than for Ireland. The same arguments which induced the adoption of 5 feet 3 inches there, would lead at least to 5 feet 6 inches here. The power should be in proportion to the magnitude of the business to be done, and it is evident that the long lines of railways to be built in Canada will be required to transport a vastly larger tonnage than in a country of such limited extent as Ireland.

It should also be recollected that the nature of much of the freight in Canada which would pass over your roads is bulky and heavy compared with its intrinsic value, unless therefore it can be carried in large quantities, and consequently at comparatively a cheap rate, it cannot be transported at all, for the expense will absorb too much of its value.

These considerations fairly carried out, with reference solely to the question of capacity as affected by the gauge, would lead us to the adoption of a gauge wider perhaps than 5½ feet, but we have taken this limit in consideration of the question of expense, as applied to the branch lines, as well as to the long main lines which are to be constructed coupled with the opinions entertained by the respectable engineers above quoted and my own that 5½ feet will give every desirable advantage.

There appears to me no room to doubt this, and my sense of duty and regard to the interest of the stockholders, constrains me to urge all honorable means to secure to your road the advantages of the 5½ feet gauge.

In recommending a wider gauge than the prevailing one, I would not be understood as



desiring to erect any barriers, or interpose any obstacles to the accomplishment of the objects sought by the promoters of rival lines. For they, in fact, open communications to good markets for the people of Canada, and they will of course be benefited not only by these avenues, but by the competition likely to arise as rival lines are increased.

But what I would recommend is simply that you give to your own lines all the superiority over your rivals which the experience of England and America has shown to exist in a broader gauge, and leave to the enterprise of our neighbors to overcome these advantages as they best can.

I have the honor to be, Sir,

Your obedient servant,

A. C. MORTON,

Chief Engineer.

From the London Mechanics' Magazine.

Improvements in Blast Furnaces, patented by Mr. James Yates, Masborough, Yorkshire, December 14, 1846.

The patentee states, that it is usual to keep the charge, in blast furnaces of ordinary construction, for as long a time as is comparable with the iron made; and that it is deemed beneficial to continue the cementing process, which is the result of the iron stone, or ore, and fuel, being subjected to a great degree of heat for several days; but that he believes this system of operation to be erroneous.

Again, under the system which has hitherto prevailed, furnaces are kept filled up to the funnel head, through which the flame and unconsumed products pass on escaping from the charge; and these furnaces are constructed in the form of two cones united at their bases, or of a cylindrical form at top; both of which forms of construction offer scarcely any obstacle to the free escape of calorific with the unconsumed products.

Now Mr. Yates proposes *firstly*, to arch in the upper part of the furnace, and diminish its height, in order that a very considerable portion of heat, instead of escaping as heretofore, may, after striking against the even surface of the dome, be deflected on the top surface, of the "burden" and absorbed by it. *Secondly*, to place feed doors, by which the material may be introduced in the side, at that point of junction between the dome and the bottom part of the furnace which allows of the largest surface of the burden being exposed to the action of the deflected heat (care being taken to maintain a sufficient and uniform space between the dome and the top of the "burden" for the purposes of reverberation); by which mode of charging the furnace the "burden" is hollow in the centre, and therefore offers less resistance to the blast, which is regulated by means of dampers suitably placed in the chimney. And *thirdly*, to employ a greater number of tuyeres, and to distribute them more equally round the hearth of the furnace than has yet been customary; and to provide each tuyere with a separate house, in order that the blast may act more regularly on the "burden."

The results of these alterations are stated to be saving in the prime cost of erection, and economy both in fuel and in engine power.

Mr. Yates instances a furnace, built according to his invention, which was 20 feet from the hearth to the top of the "burden," and had six tuyere pipes of seven eighths of an inch in diameter; with this furnace he produced, employing a hot blast at a pressure of 112 lbs. to the square inch, 110 tons of iron, from lean Derbyshire ore in one week.

The patentee proposes to adapt his plan of construction to existing furnaces, by building the dome in the top or other part of the shaft, and providing feed doors together with the necessary holes for the extra number of tuyere pipes.

After pointing out various modifications of which his invention is susceptible, such as, the substitution for tuyere pipes, of a circular passage, with grating to keep in the burden, Mr. Yates proceeds to describe a peculiar apparatus for feeding by the chimney instead of by side doors, which enables him to obtain the same result, viz: the distribution of the material around and upon, and not in, the centre of the burden. The apparatus referred to is fixed in the dome, and consists of a cone, having an aperture in its centre for the passage of unconsumed products, and is adjusted to the required size. The cone is made fast to a lever passing through the chimney, and weighted at the outside end;—so that when there is no disturbing force, its weight shall keep the cone wedged tight up into the dome, and leave no room for the escape of any vapor or calorific, except through the aperture. A feed box is suspended in the chimney, and has a conical bottom, similarly connected to a weighted lever, which, when the box is filled, falls down, and allows the passage of the material; the centre aperture of the under cone being covered by the bottom of the feed box. The weight of the material falling on the surfaces of the under cone, overcomes the weight at the end of the lever, and depressing the cone, passes into the furnace around the sides. When there is no longer any weight on either the cone portions of the dome, or the conical bottoms of the box, they both return to their places.

Other modifications described in this specification are, the connecting two or more furnaces to a common chimney, by flues provided with dampers to regulate the draught; the making the furnace of as great a diameter at the bottom, just above the hearth, as at the other point of junction with the dome, or even greater; and a peculiar construction of tuyere box, to avoid, in a great measure, the melting of the tuyere pipes.

The patentee describes, lastly, some improvements relating to steam engines and cylinders employed in blasting, which may be said briefly, to consist in working two engines together, by connecting the slide valves and rods of the one to the piston rod of the other, and *vice versa*, so that the piston at work shall open the valves of the one at rest—and in using an elastic cylinder attached immovably at one end of the main, and at the other to the piston rod. By the use of this elastic cylinder, Mr. Yates states that a more regular pressure of the blast may be obtained.

#### Baltimore and Ohio Railroad.

##### Superintendent's Report.

Continued from page 307.

##### BURDEN CARS.

The stock of freight cars of the different classes owned by the company is as follows: 314 eight wheel, weighing about 5 and carrying 6 tons each—50 four wheel house cars, weighing 2 and carrying 2½ tons—57 cars for live stock, (24 of them divided by partitions for horses and cattle) weighing 5 and carrying 6 tons—163 eight wheel gondola or box cars, weighing about 4½ and carrying about 8 tons—62 four wheel box cars, weighing 1½ and carrying 2½ tons—24 eight wheel bolster cars for lumber, weighing 2½ and carrying 7 tons—30 eight wheel stone cars, weighing 3½ and carrying 7 tons—25 four wheel stone cars, weighing 1½ and carrying 2 tons—12 eight wheel platform cars for hauling iron, weighing 4 and carrying 7 tons—4 eight wheel cars for fire wood, weighing about 3½ and carrying 8 tons—one iron eight wheel cylinder car for general freight, weighing about 6 tons and carrying 8 tons—one four wheel iron cylinder car for carrying gun powder, weighing about 2 and carrying 2½ tons—201 six wheel iron hopper coal cars, weighing 2½ and carrying 7½ tons—one eight wheel iron hopper coal car, weighing 3½ and carrying 8½ tons—one four wheel iron hopper coal car, weighing 2 and carrying 5 tons and 37 wooden hopper coal cars, weighing 3 and carrying 7 tons—making 606 eight wheel, 238 six wheel, and 139 four wheel cars—and a total of 983 cars of all classes, and 6832 wheels. These cars are used indiscriminately upon the main stem and Washington branch, as they are wanted on either road, although a separate account of repairs is kept for each.

There have been 26 new cattle cars recently contracted for, and 20 house cars advertised for, the former of which will be placed upon the road before the end of the year, and the latter early in the ensuing year.

The cost of maintaining this establishment of cars, during the past year, has been

For the main stem.....	\$52,309 53
Less increase in stock of materials during year.....	3,320 56
	<hr/> \$48,988 97

For the Washington branch.....	\$7,625 82
More decrease in stock of materials during year.....	1,954 30—\$9,580 12

Total for both roads.....\$58,469 09

The increase upon the corresponding amounts expended in 1846 is \$17,279 55, for the main stem, and \$2,555 42 for the Washington branch, making a total increase of \$19,834 97. This increase is accounted for, in part, by the increase in the number of cars in motion, and of duty performed by them, and in part by the greater extent to which the rebuilding of old and worn out cars was carried during the past as compared with the preceding year—the cost of rebuilding in 1846 being estimated at \$17,250, and in 1847 at \$27,050; a difference of \$9,800 in the value of permanent improvements to the stock. This would leave an increase of but \$10,034 97 to be charged to augmented business and wear and tear.



The cost of repairs per ton per mile, for tonnage of all kinds, including materials and fuel for the company, has been upon the main stem, 180 of a cent, in 1847, against 196 of a cent in 1846, without crediting 1847 with the deduction just stated to be its due, and which, if made, would reduce from 180 to 144. So that the duty done has been performed at a cheaper rate, notwithstanding the increase in absolute cost. The reason of this is simply, that the cars have carried fuller loads, and have been more constantly employed, especially in the coal trade.

The cost of repairs this year, upon both main stem and Washington branch, has been 2.10 of a cent per ton per mile, for all tonnage, including material and fuel for the company, and, excluding them, 23.100 of a cent. The cost of repairs of the iron coal cars has not equalled one tenth of a cent per ton per mile of coal carried.

#### PASSENGER CARS.

The present establishment of passenger cars is as follows—those of the main stem and Washington branch being distinct, although they occasionally are used upon either road in emergencies.

**Main Stem.**—11 thoroughfare cars, 7 ladies' cars, 3 cars to run next the baggage car and with an apartment for smoking, 4 baggage cars, 1 car with sleeping berths, 2 mail cars, and 2 cars for carrying emigrants at reduced fare; all of the preceding cars have 8 wheels, besides which, there are 4 six wheel package express cars, making 34 cars in all.

**Washington Branch.**—12 thoroughfare, 2 ladies', 3 baggage, and 1 mail car, all with 8 wheels, and 2 six wheel express cars, making 20 cars in all; and the total for both roads 54 cars. In addition to the above stock, proposals have been invited for furnishing 2 baggage and 2 mail cars, which will be upon the road before the end of the year, and will increase the stock to 56 passenger cars of all classes.

The cost of maintaining the passenger car establishment in repairs, for the past year, has been as follows:

For the main stem.....	\$26,094 24
To which must be added for decrease in value of materials for repairs.....	573 66
	\$26,667 90
For the Washington branch.....	\$11,915 16
Add for decrease in value of materials for repairs.....	292 33
	\$12,207 49
Total for both roads.....	\$38,875 39

The increase upon the corresponding amounts expended in 1846, is \$7,635.42 for the main stem, and the decrease, the fractional amount of 22 cents, for the Washington branch. The increase is due, in a degree, to the increase of work which has amounted to about 20 per cent., but mainly to the more extensive renewals of the cars during the past year. In 1846 about \$8000 was expended in their renovation, and in 1847 about \$12,000, which accounts for an augmented expenditure of some \$4,000, or more than one half of the difference stated. This allowance

being made, the cost of these repairs per passenger per mile has been almost identical this year with that of the previous one. In 1846 it was 1.78 of a cent per passenger, and in 1847 2.10 of a cent, without the deduction just named, and 1.79 of a cent with it.

#### STATIONARY MACHINERY AND SHOPS.

This branch of the machinery department has been already spoken of, under the head of *depots and buildings*, in the preceding division of this report; being now placed under the care of the master of machinery, as belonging more peculiarly to his department, it will hereafter be treated of in immediate connection therewith. The stationary machinery put up within the last year, has consisted of the smith's forges, tools, lathes, and fixtures at the Cumberland and Harper's Ferry shops, necessary to perform the increasing repairs to the engines and cars required at those stations, and in carrying into effect the requirements of the new organization of the service, in reference to a more equal distribution of repairs among the five principal stations upon the line—Baltimore, Frederick, Harper's Ferry, Cumberland and Washington. When at each of these points there is a shop, at which duplicate parts shall be kept and all current repairs done, leaving the more extensive renewals of the machinery to be still made at Baltimore, much time and power, now expended in getting disabled engines and cars to the latter place, will be saved, to the advantage of the service.

#### SUMMARY.

The whole expense of maintaining the locomotives, passenger and burden cars during the year, ending September 30th, 1847, has been

Upon the main stem.....	\$152,543 28
Deduct for increase in value of materials.....	5,866 18
And the actual cost of maintenance will be.....	\$146,577 10
Which is 41,992 79 greater than that of the preceding year.	
Upon the Washington branch, \$29,658 44	
Add for decrease in value of materials.....	3,281 15

And the true cost of maintenance will be..... \$32,939 59

Which is 2,174 73 greater than that of the preceding year.

#### 3d.—CONDUCT OF THE TRANSPORTATION.

The activity of this department, to which the operations of the two already treated of are subsidiary, has, in all its branches, been far greater than in any former year. The unprecedented demand upon the seaboard for produce and provisions of all kinds, caused a flow of them from the interior, such as had never been previously witnessed, and all the means at the company's command of transporting this immense and sudden accession to the eastward tonnage of the road proved, for a time, inadequate to the performance of the service required. The passenger business kept pace with that of the freight, although, to its accommodation, the means at the company's disposal were at all times equal, though frequently put into the fullest requisition.—

The whole movement upon the road during the past year, by steam and horse power together, is exhibited as follows, in comparison with that of the previous year. The tonnage embraces the company's materials and fuel, as properly entering into the comparison.

Year	Passengers carried in both directions.	Tons carried one mile.		
		Eastward.	Westward.	Total.
1847	12,835,856	31,656,944	320,546	432,941,272
1846	10,700,960	10,550,560	974,487	796,216,431
Inc.	2,134,896	11,106,384	446,009	343,722,842

We here perceive that the increase in the tonnage was 66 1/2 per cent., and in the passengers, 20 per cent., in the space of a single year.

The increase in 1847, it will be seen, was chiefly in the eastward movement of the products of the interior, which was 100 per cent. of that of the previous year, while the westward movement was apparently but 10 per cent. in advance of that of '46, and the intermediate miscellaneous transportation in both directions was less than in that year.

The extreme inequality of the trade in the two directions, has thus made a much larger force of machinery necessary to perform the transportation, than if there had been a nearer approach to reciprocity, and, as the ratio has stood during the past year, four tons have come eastward to one that has gone westward, so that three-fourths of the motive power and cars have been producing no immediate useful effect during their westward trips. The necessity of returning the cars from Baltimore, as soon as possible to the points at which they were to be loaded, made the greatest expedition necessary in the discharge of their loads at this end of the road, and the delays unavoidably attendant upon the distribution of the produce through the city by horse power, rendered this a very difficult task. Trains of empty cars were therefore sent out in the evening (the tonnage trains having previously started in the morning only) and by this means the cars were kept in quicker circulation. To effect these rapid movements in contrary directions, in harmony with those of the heavy passenger business upon a single track, provided with few passing places, much of it of inferior construction, producing frequent accidents to the trains, has not been a light labor. During the great press of the produce business throughout last winter and spring, accumulations at all the depots necessarily took place, and much complaint was made, in the absence of a correct knowledge of the real embarrassments against which this company (in common with all the proprietors of internal improvements throughout the country) were struggling. The want of suitable depot accommodations at the numerous points of reception along the line, has also added to the inconveniences under which the public and the company have labored during the times of pressure in the trade. The remedies for these several deficiencies in the means of conducting the transportation, must be found in the completion of



the measures in progress—to renovate and improve the old part of the road, to enlarge gradually the stock of engines and cars—to run the trains so as to keep up a more uniform movement, and to obtain relief from the delays attendant upon the distribution of the trade through the city.

## EXPENSES OF TRANSPORTATION.

**Main Stem.**—The charges against this department of the service amount to \$197,134 40 for the year ending September 30th, 1847. The corresponding expenditures for the previous year was \$146,057 91—showing an increase of \$51,076 49, from which must be taken the sum of \$7,723 50, to allow for an increase in the stock of fuel on hand, leaving the actual increase of expenses \$43,352 99, or 29 per cent. The increase of business done being 66½ per cent, in freight and 20 per cent. in passengers, which, when the relative expense of the freight and passenger transportation is considered (two passengers costing about as much as a ton of freight) would be equivalent to an average increase of business of about 55 per cent.—so that the advance in the expenses falls 26 per cent. within that of the business done.

Year.	WAGES.				Increase in 1847.
	Superintending agents and clerks.	Enginemen and firemen.	Conductors and brakemen.	Depot labor.	
1846	\$12,776 16	\$38,932 49	\$10,946 09	\$9,630 27	\$1,602 56
1847	\$11,173 60	\$38,832 38	\$13,971 87	\$8,709 38	\$10,100 11
					\$10,100 11
					\$4,574 22
					\$920 89
					\$15,048 60
					\$5,681 86
					\$5,439 60
					\$9,757 62
					\$3,323 38
					\$401 35
					\$43,352 99
					\$197,134 40
					\$146,057 91

An examination of the above synopsis of the transportation expenses of the two years will show that in all instances except that of

oil, the ratio of increase in expense is far within that of the increase in the business—The prices of oil and grease, the past year, have been 15 per cent. higher than the year before. Hence the exception against these items.

**Washington Branch.**—The transportation of this road were, during the past year, \$20,364 45, from which should be deducted a credit of \$525 for increased stock of fuel—leaving \$28,839 45 as the actual outlay in this department, against \$26,546 59, the amount of the preceding year, and showing an advance upon that of the latter of \$2,292 86. This increase is due, altogether, to the increase in the prices of fire wood, and oil, which has added to the expense of those articles, at least the amount of the difference stated.

Your attention is pointed to the item in the above table showing the cost of maintaining the horse power in the city. There are employed in the streets and at Mount Clare, the average number of 105 horses—of which 73 belong to the tonnage and 32 to the passenger business—the severity of the duty to which they are subjected is evidenced by the fact that an average of 12 of the former and 4 of the latter are always in the list of disabled; the wear and tear of the tonnage horses being 33½ per cent. the greatest. The expense of this power has increased in a much slower proportion than the duty performed. Of the whole expense of \$35,517 78, the cost of carrying passengers is \$11,511 93, and of tonnage of \$24,005 85. In 1846, it was for passengers \$8,660 02, and tonnage \$21,534 38. Increase this year, for passengers \$2,851 91, and for tonnage \$2,471 47. The number of passengers carried one mile this year, was 180,273—last year 130,000; increase 50,273 or 38½ per cent.; while the increase in the expense was but 33 per cent.

The number of tons carried one mile this year was 317,133 (besides materials, etc., for the company)—last year 156,573; increase 160,560, or 103 per cent., while the increase of expense would appear to be but 11½ per cent. The cost per passenger per mile, in the year just closed, was 6 4-10 cents—and per ton per mile 7 6-10 cents—not including the company's materials, which are estimated as having amounted to 18,572 tons hauled one mile.

The expenses of transportation upon the Washington branch are necessarily much less subject to variation than those of the main stem. The chief business of the road, the carrying of passengers, is indeed very fluctuating, and there is no regular progressive increase except in that of tonnage, which is steadily, though slowly advancing. The number of trains run remains the same from year to year, and the cost of running them is not very materially effected, by the loads they carry.

Upon a general review of the operations and expenses of the transportation department during the past year, it must be apparent, that having reference to the results which its administration has produced, it has been conducted with energy and economy.

## 4th.—REVENUE, EXPENSES AND TRADE.

## Main Stem.

1. **Revenue.**—The receipts from the several sources are as follows, for the year ending September 30th, 1847; and those of the previous fiscal year are placed by the side of them, that the relations of each item may be seen.

	1846.	1847.		1846.	1847.
Passengers in Main Stem trains,.....	361,546 21	\$403,812 44	Passengers in Washington branch trains on 8 miles of main stem,.....	333,447 51	\$368,580 26
Tonnage in Main Stem trains,.....	628,523 51	\$447,766 00	Do. in Washington branch trains as above	183,757 51	\$183,757 51
Mail transportation in Main Stem train,.....	40,664 00	\$47,509 48	Mail transportation in Washington branch train as above	18,289 18	\$18,289 18
For use of cars upon Winchester and Potomac Railroad.....	3,922 91	\$4,208 00	Toll collected at Harper's Ferry viaduct,.....	1,551 23	\$1,551 23
Rest of Fruit street depot to Philadelphia Railroad Company,.....	1,500 00	\$1,500 00			
Total revenue from all sources	\$1,101,936 58	\$1,101,936 58			

The revenue is thus seen to have reached the sum of \$1,101,936 58—exceeding that of the previous year \$220,251 05, or 25 per cent. of the latter.

Of this increase, five-sixths is due to the tonnage, and but one-sixth to the passenger business.

The increase in the revenue from tonnage has been mainly realized from produce, live stock and coal, transported eastwardly.

The increase of receipts from passengers has been chiefly upon the through travel, in connection with the stage lines west of Cumberland.

**Expenses.**—The expense of working the road is summed up as follows, under the heads already treated of, adding the item of "general expenses," not embraced under any one of them, and consisting of losses by fire and other accidents, salaries, house rent, law expenses, insurance, taxes and other incidentals:

1. Maintenance of road,.....	\$215,048 04
2. Maintenance of machinery,.....	146,577 10
3. Conduct of transportation,.....	182,410 90
4. General expenses,.....	14,877 09
Making an aggregate of,.....	\$558,911 79

The total expenses charged upon the books are \$590,828 98. The difference of \$29,917 26 is the increase in the estimated value of materials and fuel on hand, which has taken place during the year. A careful account is taken of the stock of all kinds at the close of each year, and thus the comparison is carried on from year to year, which is manifestly essential to a correct exhibit of the



absolute as well as relative expense of each year's operations.

The gross receipts of the year having been \$1,101,036 58, and the actual expenses \$565,911 72, the net earnings of the road were, consequently, \$535,024 86, which is 7½ per cent upon the capital of \$7,000,000.

The expenses have been 51½ per cent. of the receipts, taking the account of each as it stands above. But if the part of the expenses consisting of permanent improvements, independent of allowances for depreciation, and, therefore, properly chargeable to capital, and amounting, on all accounts, to at least \$50,000, should be deducted from the apparent current expenses, the latter would be reduced to \$515,911 72,—forming but 46 8-10 per cent. of the receipts of the year.

#### WASHINGTON BRANCH.

The receipts of this road, for the year ending September 30th, 1837, were as follows:

From passengers.....	\$159,402 05
From tonnage.....	48,706 62
From mail.....	10,176 00

Total receipts from all sources, \$218,284 67

The expenses, under the heads above treated of, are summed up as follows:

1. Maintenance of road.....	\$21,361 21
2. Maintenance of machinery.....	32,939 59
3. Conduct of transportation.....	23,839 45
4. General expenses.....	8,875 87
	92,016 12

Leaving an excess of receipts over expenditures of.....\$126,268 55

To show the real net revenue, the bonus paid to the state and amounting this year to \$39,528 30 must be deducted, which leaves but \$86,740 25 as the real profits of the work. This tax is not however in fact any part of the cost of working the road, but is an incidental adjunct to the improvement, and therefore in computing, professionally, the value of the Washington road as a line of railway it should be left out of view. Comparing then the receipts and expenses apart from this accessory, we see that the latter constitute but 42 per cent. of the former, and that the excess of the one over the other would yield 7½ per cent. upon the capital of \$1,650,000, invested in the work.

The excess of receipts over all expenses, including the state tax, shown by the account books, and exhibited in the statement of the treasurer, is \$69,607 56, being \$2,867 31 more than the amount of \$66,740 25 above stated. The difference being due to the estimated decrease in the value of stock of materials, etc., of which the books do not take notice.

#### TRADE OF THE ROAD.

##### Main Stem.

The general movement of the trade of the road is indicated in the preceding statements, which show the tonnage in either direction, and that for each ton going westward there have been four coming eastward, during the past year. Of the eastward tonnage, the principal share has been contributed by flour and coal, the amounts of which, arriving in Baltimore, are shown as follows, as well as the other freight, classified under a few prominent heads.

Rec'd at Baltimore during the year.	Barrels.	Tons.
Flour from all points of the road.....	579,870 1	62,599
Coal from Cumberland.....		50,259
Grain from all points.....		6,693
Live stock from all points.....		8,201
Provisions from all points.....		3,824
Meal, etc., from all points.....		1,967
Lard and butter from all points.....		1,480
Whiskey from all points.....		700
Tobacco from all points.....	4,130 hhd.	1,700
Iron from all points.....		8,855
Granite and soapstone.....		5,891
All other tonnage.....		6,282

Total tons of commodities of all kinds... 158,466

This tonnage forms but that part of the eastward movement which reached Baltimore constituting however, of course, almost the whole amount of the trade eastward. Of the westward tonnage no classification has heretofore been made upon the company's records, and the keeping of a full and satisfactory one, would be attended with a good deal of trouble. It is intended however, to make such a division of the tonnage going westward as will show some of the chief articles returned to the interior, for the products sent by it to the seaboard.

In order to permit a comparison of the eastward trade over the road, in the principal staples during the successive years, since the opening of the road; a table is annexed, lettered F, containing a condensed exhibit of the tonnage arriving in Baltimore since the year 1831, by the Baltimore and Ohio Railroad. In reference to the coal trade, it may be observed, that the number of cars built for that trade, and not suited for other transportation, is sufficient for the delivery in Baltimore of 90,000 tons per annum, besides supplying the local demand of the line, which is considerable. It may be expected, therefore, that during the coming year nearly twice as much Cumberland coal will be brought to Baltimore as reached it in the year just expired. The clear profit upon the conveyance of this amount of coal will be not less than from \$50,000 to \$60,000, and were the company in a position to increase its machinery, for the conveyance of this branch of their trade, to the extent desired and urged by the parties engaged in it, the revenue from this source might be largely multiplied. Until, however, the means of reaching tide water with this trade is facilitated, by the proposed extension to the south side of the harbor, its further increase is hardly to be desired, either on the part of the company or those in the business.

It is stated above that the principal increase in passengers has been in the class of through travellers, to and from points east and west of Baltimore and Cumberland. The number of passengers carried in the cars during the past year..... 288,674½

While the number for the previous year was..... 280,264½

So that the increase was..... 8,410

The number of passengers carried one mile this year, as before stated, 12,835,856, and last year 10,700,960—the increase being 2,134,896. The number of miles travelled by each of the additional passengers of the present year must then have averaged 254,

the one half of which for each direction east and west is 127 miles, but fifty miles short of the whole length of the road. The number of passengers carried in each direction between Baltimore and Philadelphia, in the east, and Wheeling and Pittsburg on the west, is as follows:

Westward—Philadelphia to Pittsburg.....	8,061
Baltimore to do.....	5,533
Total to Pittsburg.....	13,594
Philadelphia to Wheeling.....	4,050
Baltimore to do.....	4,379
Total to Wheeling.....	8,429
Total through passengers westward.....	22,016
Eastward—Pittsburg to Philadelphia.....	6,977
Do. to Baltimore.....	3,219
Total from Pittsburg.....	10,196
Wheeling to Philadelphia.....	5,798
Do. to Baltimore.....	3,379
Total from Wheeling.....	9,177
Total through passengers eastward.....	19,373
Total through passengers eastward and westward.....	41,389

From this statement it would then appear, that of the whole number of 41,389 through passengers 16,503 have started from or stopped at Baltimore; and 24,886 have come from or gone to Philadelphia. The inferences to be drawn from these facts must be accompanied by with proper allowances for the travellers, who although starting from or bound to Philadelphia, halt in Baltimore, and for those doing the same by Baltimore have come from or are going to Philadelphia.—The facts may, however, be useful in showing the course of travel over the line.

The revenue derived from western passengers has been \$194,502—being 48 per cent. of the entire receipts from passengers during the year. Analogous to the class of western passengers over the main stem is that of southern passengers over the Washington branch, who also contribute to the travel and revenue of the former.

Their number during the year just ended was, Southwardly..... 8,957 Northwardly..... 8,081

Making a total in both directions of..... 17,038 And yielding a clear revenue to the main stem of \$4,361 60. The remaining travel upon the Washington branch gives a clear revenue to the main stem of 30,323 68—From the local travel of the main road, therefore, there has been derived a revenue of 174,625 16; the whole revenue from passengers, amounting as before stated to 403,812 44.

#### WASHINGTON BRANCH.

**Tonnage.**—The trade upon this road, in the direction of Washington, consists almost entirely of merchandise going to that city. Limestone, to the extent of some 3000 tons per annum, is conveyed from Baltimore to the Annapolis junction, for the Patuxent iron works. In the direction of Baltimore the tonnage is principally iron ore and iron, from the line of the road. The Laurel Factory is a contributor to the trade in both directions. The number of tons drawn one mile on this road, during the past year, was, eastward—



ly, 551,815—and westwardly 494,200—total 1,046,015 tons one mile, exclusive of materials for the company, amounting to 49,807 tons; and making an aggregate of 1,094,822 tons. The freight business upon this road must continue steadily to increase until it bears a much larger proportion to its passenger business than at present. The revenue from freight in 1847, is \$1,502 08 greater than in 1846.

**Passengers.**—The number of passengers carried upon this road during the past year, has been 151,683 for various distances; equivalent to the conveyance of 3,834,701, a distance of one mile. Of these the through southern passengers numbered 17,038 over the whole road—equal to 528,178, a distance of one mile, and constituting about 1.7 of the whole number; showing that it is very mainly the local travel which sustains this road. The revenue from passengers in 1847, is \$10,169 85 less than that of 1846; the national fair, held in May of that year, having itself yielded a revenue of about \$10,000,—and the occurrence of such extraordinary occasions of travel upon this road must always render its income from passengers unsteady.

Having thus gone over the several subjects indicated in the commencement of this report, I conclude what seems necessary to be said in regard to the "working of the road" with a reference to the accompanying tabular statement, lettered G, in which the several results above set forth are exhibited in a condensed form, with such other statements and deductions as seem suitable to be presented. This table will form a continuation, in a somewhat different form, of the series of statements of the same kind heretofore attached to the annual report, and prepared by the officer formerly in charge of the maintenance of the road and machinery. A more condensed table, lettered H, and showing the same results on the Washington branch, is also appended.

A statement of the business, revenue, expenses and dividends of the company since the opening of the road in 1830, is also appended, lettered I, from which will be observed the progressive increase of its extent, operations and income. It will be seen that the aggregate profits upon the working of the road have amounted to \$3,037,647, of which \$1,089,138 have been paid in dividends to the stockholders, and \$1,948,509 has been reinvested in the work, in permanent additions and improvements, which have increased its value fully to that amount; so that the nominal capital of \$7,000,000 does not represent truly the worth of the property of the company, which has, in fact, cost the sum of \$8,498,509, and is fully worth that sum at this time, and prospectively much more. Of the details of this reinvestment, it is not now necessary to state more than that they consist of what has been paid for iron rails, for the road west of Harper's Ferry, for locomotive engines and cars, for the new track east of Harper's Ferry, and for numerous substantial and highly valuable improvements in bridges, depot buildings, work shops, water stations, and other parts or appurtenances of the road,

all of which remain as visible and tangible evidences that the portion of the income not directly given to the stockholders, has not been squandered and sunk, but is existing, and in truth, if not in appearance, yielding them interest. The comparison with the operations of other roads promised at the outset of this report I have thought it best to present in a condensed form in the statement annexed, lettered K, and an examination of which cannot fail to produce favorable impressions of the manner in which the Baltimore and Ohio Railroad, with all the disadvantages under which it is admitted to have labored, has been administered.

## II. The Reconstruction and Improvement of the old Road.

1. *The Laying of the new Track.*—It has been already stated under the head of "maintenance of road," that of the new track, by which the old plate rail is being replaced, there had been 41 miles laid upon the 1st of this October; thirty of which were laid last season, and eleven during the present. There remains to be laid twenty miles of the track authorized this year, and for which all the materials but the iron rails are fully provided. The rails are furnished by the Covington company at the Avalon works, upon the line of the road, where the delivery is made with the utmost convenience. The iron is of excellent quality and well rolled, and is placed in the track as fast as it is manufactured.

The part of the new track laid this year is in excellent adjustment, having been carefully put down upon a very firm foundation, for which the old stone track, (the sills of which are still mostly in their places,) has in part been made available, as a substitute for the under sill of timber. The ballasted horse path used in the early times of the work, when animal power was the only means of locomotion, is now also yielding a return for the expense of its construction by affording an excellent bed for the new structure.

2. *The Alterations in the Location of the Road bed.*—These improvements in the line, which were authorized and put under contract upon very favorable terms some weeks since, are, in part, progressing, although some delay has been experienced in procuring from the land owners the right to make them.—These difficulties will, it is hoped, be shortly removed, and this important work be permitted to progress without interruption, so as to be completed in the spring, and receive the new track which is to be laid upon them.

## III. The Extension of the Road.

1. *West of Cumberland.*—In June last, I received your instructions to locate the line of the road as far westward as the Maryland and Virginia state line, on the southern route towards the Ohio. Three parties of engineers were accordingly organized, one of which went into the field on the 1st of July, another about the middle of that month, and the third about the 1st of August. The first has been engaged between Cumberland and Westernport, 27 miles up the valley of the North branch, and has made careful locations of several lines in the town of Cumberland, and

extended a line up the Potomac to Fort hill, 13 miles distant. This party has also traced with care, several lines from points upon the finished road as far east of Cumberland as the mouth of Patterson's creek, 8 miles below across the Knoby mountain, with a view to cutting off the great bend of the river at Cumberland. A saving of ten miles of distance may be effected by the best of these routes. The relative grades, curves and cost, are not yet definitely known. This party has located a distance fully equal to that of the whole line to Westernport, and, having now united the two routes east of Fort hill, will continue the staking out of the route above that point, and complete it early in the coming winter.

The second party has been employed in the location between Westernport and the Backbone or main summit, and has had a very difficult line to run upon the mountain slopes of the very rugged ravines of Crabtree creek and Savage river. The progress of this party has been, consequently, very slow; and it has been further retarded by the prevalence of the almost perpetual rains of that humid region. The chief difficulties of this section of the route are, however, now overcome, and it is hoped that its preparation for contract may also be completed early in the winter.

The third party has been engaged upon the easy and beautiful part of the route lying westward from the summit through the glades and has completed its location, for a distance of upwards of 15 miles, to the State line, and is now extending it in Virginia to the head of Snowy creek, whence the descent to the valley of Cheat river commences.

The rigorous winter which prevails in that elevated district will not permit the advantageous prosecution of the surveys later in the season than the end of the present year, at which time it is believed that about sixty-five miles of the route from Cumberland west, will be prepared for contract.

The measures necessary to secure the right of way from the land owners have also been in active progress, under the management of the company's counsel in Alleghany county.

2. *East of Mount Clare.*—The new surveys directed by the recent order of the board in reference to the extension to tide water, are now being made, and their results will be reported so soon as the necessary lines can be run and estimates prepared.

In closing this report, I must express my regret that it has extended to so great a length; but upon reviewing what has been written, I have not been able to see in what particulars it could be curtailed, without impairing its value as an exhibit of the operations of the road, to which I have endeavored to give a form and arrangement that might make it useful for the present information of those interested in the work, as well as for future reference in the preparation of similar documents hereafter.

I am, sir, respectfully,  
Your obed't serv't,  
BENJ. H. LATROBE,  
Chief Engineer, acting as Gen. Sup't.



**RAILROAD IRON.—500 TONS OF THE**  
latest and most approved pattern of T Rail—  
weighing about 63 lbs. per yard, shipped from Eng-  
land in October, and shortly expected. For sale by  
**BOORMAN, JOHNSTON & CO.**  
3149 119 Greenwich St., New York.

**DEAN, PACKARD & MILLS,**  
MANUFACTURERS OF ALL KINDS OF

**RAILROAD CARS,**  
SUCH AS

PASSENGER, FREIGHT AND CRANK CARS,

— ALSO —

SNOW PLOUGHS AND ENGINE TENDERS

OF VARIOUS KINDS.

CAR WHEELS AND AXLES fitted and furnished

at short notice; also, STEEL SPRINGS

of various kinds; and

SHAFTING FOR FACTORIES.

The above may be had at order at our Car Factory,

REGUL DEAN,

ELIAB PACKARD, } SPRINGFIELD, MASS. 1748

ISAAC MILLS,

**T** RAILROAD COMPANIES AND BUILD-  
ERS OF MARINE AND LOCOMOTIVE

ENGINES AND BOILERS.

**PASCAL IRON WORKS.**

**WELDED WROUGHT IRON TUBES**

From 4 inches to 1 in calibre and 2 to 12 feet long,

capable of sustaining pressure from 400 to 2500 lbs.

per square inch, with Stop Cocks, T. L. and

other fixtures to suit, fitting together, with screw

joints, suitable for STEAM, WATER, GAS, and for

LOCOMOTIVE and other STEAM BOILER FLUES.

Manufactured and for sale by

**MORRIS, TASKER & MORRIS.**

Warehouse N. E. Corner of Third & Walnut Streets,

**PHILADELPHIA.**

**RAILROAD IRON.—THE NEW JERSEY**

Iron Company, Boonton, N. J., are now mak-

ing Railroad Bars, and are prepared to execute or-

ders for any required pattern. Apply to

**FULLER & BROWN, Agents,**

No. 139 Greenwich, corner of Cedar street.

June 1, 1847. 10d

**CHILLED RAILROAD WHEELS.—THE**

undersigned are now prepared to manufacture

their improved Corrugated Car Wheels, or, Wheels

with any form of Spokes or Disks, by a new process

which prevents all strain on the metal, such as is

produced in all other chilled wheels, by the man-

ner of casting and cooling. By this new method of

manufacture, the hubs of all kinds of wheels may

be made whole—that is, without dividing them into

sections—thus rendering the expense of banding un-

necessary; and the wheels subjected to this process

will be much stronger than those of the same size

and weight, when made in the ordinary way.

**A. WHITNEY & SON,**

Willow St. below 13th,

Nov. 10, 1847. [C.] Philadelphia, Penna.

**LAP—WELDED**

**WROUGHT IRON TUBES**

FOR DISTRICTS OF BLUE

**TUBULAR BOILERS,**

FROM 1 1/4 TO 6 INCHES DIAMETER,

and

ANY LENGTH, NOT EXCEEDING 17 FEET.

These Tubes are of the same quality and manu-

facture as those so extensively used in England,

Scotland, France and Germany, for Locomotive,

Marine and other Steam Engine Boilers.

**THOMAS PROSSER,**

Patentee.

28 Flau street, New York.

**PATENT RAILROAD, SHIP AND BOAT**

Spikes. The Troy Iron and Nail Factory keeps

constantly for sale a very extensive assortment of

Wrought Spikes and Nails, from 3 to 10 inches,

manufactured by the subscriber's Patent Machinery,

which after five years' successful operation, and now

almost universal use in the United States (as well

as England, where the subscriber obtained a patent)

are found superior to any ever offered in market.

Railroad companies may be supplied with Spikes

having countersink heads suitable to holes in iron

rails, to any amount and on short notice. Almost

all the railroads now in progress in the United States

are fastened with Spikes made at the above named

factory—for which purpose they are found invalua-

ble, as their adhesion is more than double any com-

mon spikes made by the hammer.

All orders directed to the Agent, Troy, N. York

will be punctually attended to.

**HENRY BURDEN, Agent.**

Spikes are kept for sale, at Factory Prices, by I.

& J. Townsend, Albany, and the principal iron mer-

chants in Albany and Troy; J. I. Brower, 222 Water

St., New York; A. M. Jones, Philadelphia; T. Jan-

viers, Baltimore; Degrand & Smith, Boston.

Railroad Companies would do well to forward

their orders as early as practicable, as the subscriber

is desirous of extending the manufacturing so as to

keep pace with the daily increasing demand.

ja45

**MANUFACTURE OF PATENT WIRE**

Rope and Cables for Inclined Planes, Stand-

ing Ship Rigging, Mines, Cranes, Tillers etc., by

**JOHN A. ROEBLING, Civil Engineer,**

Pittsburgh, Pa.

These Ropes are in successful operation on the

planes of the Portage Railroad in Pennsylvania, on

the Public Slips, on Ferries and in Mines. The

first rope put upon Plane No. 3, Portage Railroad,

has now run 4 seasons, and is still in good condi-

tion. 92v1.1v

**FRENCH AND BAIRD'S PATENT SPARK ARRESTER.**

**TO THOSE INTERESTED IN**

Railroads, Railroad Directors

and Managers are respectfully in-

ited to examine an improved Spark

Arrester recently patented by the un-

dersigned.

Our improved Spark Arresters

have been extensively used during the

last year on both passenger & freight

engines, and have been brought to

such a state of perfection that no an-

noyance from sparks or dust from the

chimney of engines on which they

are used is experienced.

These Arresters are constructed on

an entirely different principle from any heretofore offered to the public.

The form is such that a rotary motion is imparted to the heated air,

smoke and sparks passing through the chimney, and by the centrifugal

force thus acquired by the sparks and dust they are separated from the

smoke and steam, and thrown into an outer chamber of the chimney

through openings near its top, from whence they fall by their own

gravity to the bottom of this chamber; the smoke and steam passing

off at the top of the chimney, through a capacious and unobstructed

passage, thus arresting the sparks without impairing the power of

the engine by diminishing the draught or activity of the fire in the furnace.

These chimneys and arresters are simple, durable and neat in appearance. They are now in use

on the following roads, to the managers and other officers of which we are at liberty to refer those who

may desire to purchase or obtain further information in regard to their merits:

R. L. Stevens, President Camden and Amboy Railroad Company; Richard Peters, Superintendent

Georgia Railroad, Augusta, Ga.; G. A. Nicolls, Superintendent Philadelphia, Reading and

Pottsville Railroad, Reading, Pa.; W. E. Morris, President Philadelphia, Germantown and Norris-

town Railroad Company, Philadelphia; E. B. Dudley, President W. and R. Railroad Company, Wil-

mington, N. C.; Col. James Gadsden, President S. C. and C. Railroad Company, Charleston, S. C.;

W. C. Walker, Agent Vicksburg and Jackson Railroad, Vicksburg, Miss.; R. S. Van Rensselaer,

Engineer and Sup't Hartford and New Haven Railroad; W. R. McKee, Sup't Lexington and Ohio

Railroad, Lexington, Ky.; T. L. Smith, Sup't New Jersey Railroad Trans. Co.; J. Elliott, Sup't Mo-

tive Power Philadelphia and Wilmington Railroad, Wilmington, Del.; J. O. Sterns, Sup't Elizabeth-

town and Somerville Railroad; R. R. Cuyler, President Central Railroad Company, Savannah,

Ga.; J. D. Gray, Sup't Macon Railroad, Macon, Ga.; J. H. Cleveland, Sup't Southern Railroad,

Monroe, Mich.; M. F. Chittenden, Sup't M. P. Central Railroad, Detroit, Mich.; G. B. Fisk, Presi-

dent Long Island Railroad, Brooklyn.

Orders for these Chimneys and Arresters, addressed to the subscribers, care Messrs. Baldwin & Whit-

ney, of this city or to Hinckley & Drury, Boston, will be promptly executed. **FRENCH & BAIRD.**

N. B.—The subscribers will dispose of single rights, or rights for one or more States, on reasona-

ble terms. Philadelphia, Pa., April 6, 1844.

\*. The letters in the figures refer to the article given in the Journal of June, 1844. ja45

**PATENT HAMMERED RAILROAD, SHIP**

and Boat Spikes. The Albany Iron and Nail

Works have always on hand, of their own manufac-

ture, a large assortment of Railroad, Ship and Boat

Spikes, from 2 to 12 inches in length, and of any form

of head. From the excellence of the material al-

ways used in their manufacture, and their very gen-

eral use for railroads and other purposes in this coun-

try, the manufacturers have no hesitation in warrant-

ing them fully equal to the best spikes in market,

both as to quality and appearance. All orders ad-

ressed to the subscriber at the works, will be prompt-

ly executed. **JOHN F. WINSLOW, Agent.**

Albany Iron and Nail Works, Troy, N. Y.

The above spikes may be had at factory prices, of

Erastus Corning & Co., Albany; Hart & Merriitt,

New York; J. H. Whitney, do.; E. J. Etting, Phila-

delphia; Wm. E. Coffin & Co. Boston. ja46

**MACHINE WORKS OF ROGERS,**

Ketchum & Grosvenor, Patterson, N. J. The

undersigned receive orders for the following articles,

manufactured by them of the most superior descrip-

tion in every particular. Their works being exten-

sive and the number of hands employed being large,

they are enabled to execute both large and small or-

ders with promptness and despatch.

Railroad Work.

Locomotive steam engines and tenders; Driving

and other locomotive wheels, axles, springs & flange

tires; car wheels of cast iron, from a variety of pat-

terns; and chills; car wheels of cast iron with

wrought tires; axles of best American refined iron;

springs; boxes and bolts for cars.

Cotton, Wool and Flax Machinery

of all descriptions and of the most improved patterns,

style and workmanship.

Mill gearing and Millwright work generally;

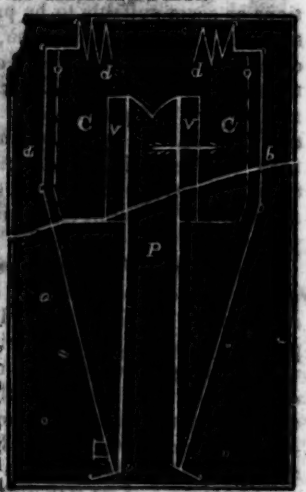
hydraulic and other presses; press screws; callen-

ders; lathes and tools of all kinds; iron and brass

castings of all descriptions.

**ROGERS, KETCHUM & GROSVENOR,**

Paterson, N. J., or 60 Wall street, N. York.





# DAVENPORT & BRIDGES'

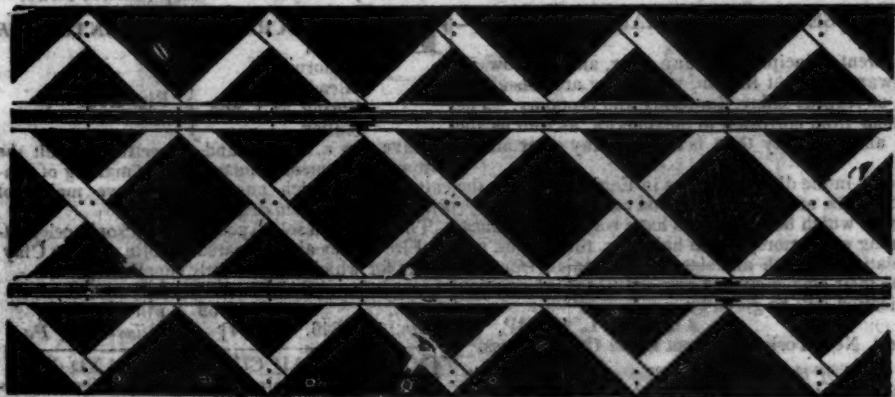
## CAR WORKS, CAMBRIDGEPORT, MASS.



Manufacture to Order, Passenger and Freight Cars of every description, and of the most improved pattern; also furnish Snow Ploughs and Chilled Wheels of any pattern and size. Forged Axles, Springs, Boxes and Bolts for Cars at the lowest prices.

All orders punctually executed and forwarded to any part of the country. Our Works are within fifteen minutes ride from State street, Boston—Omnibuses pass every fifteen minutes.

### THE HERRON RAILWAY TRACK.



As seen stripped of the top ballasting

A GOLD MEDAL AWARDED THE INVENTOR BY THE AMERICAN INSTITUTE.

**THE UNDERSIGNED RESPECTFULLY** invites the attention of Engineers, and Railroad Companies, to some highly important improvements he has recently made in the Herron system of Railway structure. These improvements enable him to effect a very large reduction in the quantity of Timber, and cost of construction, without impairing the strength of the Track, or its powers of resisting frost, while they secure additional features of excellence in the Drainage and facility of making Repairs.

The above cut represents the "Herron Track" as it is laid on the Philadelphia and Reading, and on the Baltimore and Susquehanna Railroads. The intersection of the sills of the trellis are 5 feet from centre to centre, while in the new construction they are only 2 1/2 feet. This renders the string piece unnecessary, thus removing the only objectionable feature found in the Track.

The result of experience has proved that all Tracks constructed with longitudinal timbers, such as mud sills, and more especially, the continuous bearing string pieces retain the rain water that falls between the Rails, which, being thus confined, settles along those timbers, and accumulating in quantity flows rapidly along them on the descending grades, and frequently causing large breaches in the embankments of the road. Whereas all water intercepted by the oblique sills of the trellis, is discharged immediately into the side ditches.

In the 5 foot plan, the Track occupies a Road bed nearly 11 feet wide, while the new construction takes

but 8 feet; the timber being more concentrated under the Rails. A block of hard wood, about 2 feet long and 15 inches wide, is introduced into a square of the trellis for the purpose of giving an additional, and effectual support to the joints of the Rails, which rest upon it. Should these joint blocks become chafed and worn by the working, and imbedding of the chairs, as is now the case on all Railroads, they can be readily replaced without any derangement of the timbers less liable to wear.

The following is a general estimate of its cost near the seaboard. In the interior it will be considerably less.

ESTIMATE OF THE PROBABLE COST OF ONE MILE.	
4,224 Timbers, 11 ft. long, 3 x 6 inches =	
68,696 ft. b.m., at \$10 =	\$686 96
587 Oak joint blocks 2 ft. x 3 x 15 in. =	
4,403 ft. b.m., at \$13 =	57 24
13,000 Spikes = 2,250 lbs. at 4 cts. =	101 25
Workmanship free of patent charge =	600 00

Cost of one mile including the laying of the Rail = \$1,445 45

He has made other important improvements, which will be shown in properly proportioned models, that give a much better idea of the great strength of the Track than a drawing will do.

Sales of the Patent right to all the distant States will be made on liberal terms.

**JAMES HERRON.**  
Civil Engineer and Patentee.  
No. 277 South Tenth St., Philadelphia.

ENGINEERS' AND SURVEYERS' INSTRUMENTS MADE BY  
**EDMUND DRAPER,**  
Surviving partner of  
**STANCLIFFE & DRAPER.**



No 23 Pear street, below Walnut,  
1710 near Third, Philadelphia.



**THE SUBSCRIBER** has on hand a good assortment of his best Leveling and Surveying Instruments, among them his improved Compass for taking angles without the needle—also Bells, suitable for Churches, Railroad Depots, etc.

**ANDREW MENEELY.**  
West Troy, May 12, 1847.

**PIG AND BLOOM IRON.**—THE SUBSCRIBERS are agents for the sale of numerous brands of Charcoal and Anthracite Pig Iron, suitable for Machinery, Railroad Wheels, Chains, Hollowware, etc. Also several brands of the best Puddling Iron, Juniata Bloom suitable for Wire, Boiler Plate, Axes, Iron, Shovels, etc. The attention of those engaged in the manufacture of iron is solicited by

**A. WRIGHT & NEPHEW,**  
121 Vine St. Wharf, Philadelphia.

**RAILROAD IRON.**—THE "MONTOUR Iron Company," Danville, Pa., is prepared to execute orders for the heavy Rail Bars of any pattern now in use, in this country or in Europe, and equal in every respect in point of quality. Apply to

**MURDOCK, LEAVITT & CO.,**  
Agents,  
77 Pine St., New York.

**LAWRENCE'S ROSENDALE HYDRAULIC CEMENT.** This cement is warranted equal to any manufactured in this country, and has been pronounced superior to Francis' "Roman." Its value for Aqueducts, Locks, Bridges, Floors and all Masonry exposed to dampness, is well known, as it sets immediately under water, and increases in solidity for years.

For sale in lots to suit purchasers, in tight paper, ea barrels, by **JOHN W. LAWRENCE,**  
142 Front street, New York.

Orders for the above will be received and promptly attended to at this office.

**RAILROAD IRON AND LOCOMOTIVE Tyres** imported to order and constantly on hand by **A. & G. RALSTON**  
Mar. 20/47 4 South Front St., Philadelphia.

**THE NEWCASTLE MANUFACTURING Company** continue to furnish at the Works, situated in the town of Newcastle, Del., Locomotive and other steam engines, Jack screws, Wrought iron work and Brass and Iron castings, of all kinds connected with Steamboats, Railroads, etc.; Mill Gearing of every description; Cast wheels (chilled) of any pattern and size, with Axles fitted, also with wrought tires, Springs, Boxes and bolts for Cars; Driving and other wheels for Locomotives.

The works being on an extensive scale, all orders will be executed with promptness and despatch. Communications addressed to Mr. William H. Dobbs, Superintendent, will meet with immediate attention.

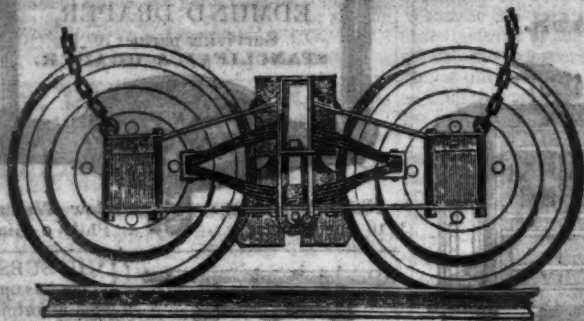
**ANDREW C. GRAY,**  
President of the Newcastle Manuf. Co.

**LOCOMOTIVE AND CAR AXLES.** The Subscribers are now prepared to receive orders for the well known and approved Reading Locomotive and Car Axles—drawn to any required pattern from Bloom Iron only. Address

**SAM'L KIMBER & CO.,**  
Willow Street Wharf,  
Philadelphia, Pa.



**RAY'S EQUALIZING RAILWAY TRUCK.—THE SUBSCRIBER** having recently formed a business connection in the City of New



York, expressly for the manufacture of the newly patented and highly approved Railroad Truck of Mr. Fowler M. Ray, is ready to receive orders for building the same, from Railroad Companies and Car Builders in the United States, and elsewhere.

The above Truck has now been in use from one to two years on several roads a sufficient length of time to test its durability, and other good qualities, and to satisfy those who have used it, as may be seen by reference to the certificates which follow this notice.

There have been several improvements lately introduced upon the Truck, such as additional springs in the bolster of passenger cars, making them delightful riding cars—adapting it to tenders, trucks forward of the locomotive, and freight cars, which, with its original good qualities, make it in all respects the most desirable truck now offered to the public.

Orders for the above, will, for the present, be executed at the New York Screw Mill, corner 33d street and 3d avenue, (late P. Cooper's rolling mills) and at the Steam Engine Shop of T. F. Secor & Co., foot of 9th street, East

river, (of which firm the subscriber was late a partner) under the immediate supervision of Mr. Ray himself.

Several sets of trucks containing the latest improvements have recently been turned out for the New York and Erie railroad, and the New Jersey Transportation company, which may be seen upon said roads.

The patronage of Railroad Companies and Car Builders is respectfully solicited.

New York, May 4, 1846.

W. H. CALKINS, and Others.

To all whom it may concern:—This is to certify that the New Haven, Hartford and Springfield railroad co., have had in use six sets of F. M. Ray's patent trucks for the last 20 months, during which time it appears to me, they have proved to be the best and most economical truck now in use.

[Signed.]

WILLIAM ROE, Sup't of Power.

I certify that F. M. Ray's Patent Equalizing Railroad Truck has been in use on the Philadelphia and Reading railroad for some time past, under a passenger car.

For simplicity of construction, economy in cost, lightness of material, and extreme ease of motion, I consider it the best truck we have ever used. Its peculiar make also renders it less liable to be thrown off the track, when passing over any obstruction. We intend using it extensively under the passenger and freight cars of the above road.

Reading, Pa., October 6, 1845.

[Signed.] G. A. NICOLL,

Sup't Transportation, etc., Philadelphia and Reading Railroad.

To all whom it may concern:—This is to certify that the N. Jersey Railroad and Transportation company have used Fowler M. Ray's Truck for the last seven months, during which time it has operated to our entire satisfaction. I have no hesitation in saying that it is the simplest and most economical truck now in use.

[Signed.] T. L. SMITH,

Jersey City, November 4, 1845.

N. Jersey Railroad and Transp. Co.

This is to certify that F. M. Ray's Patent Equalizing Railroad Truck has been in use on the Long Island railroad for the last year, under a freight car. For simplicity of construction, economy in cost, lightness of material and ease of motion, I consider it equal to any truck we have in use.

Long Island Railroad Depot,

[Signed.]

JOHN LEACH,

Jamaica November 12, 1845.

1y19

Sup't Motive Power.

**ENGLISH PATENT WIRE ROPES—FOR THE USE OF MINES, RAILWAYS, ETC.** for sale or imported to order by the subscriber.

These Ropes are manufactured on an entirely different principle from any other, and are now almost exclusively used in the collieries and on the railways in Great Britain, where they are considered to be greatly superior to hempen ones, or iron chains, as regards safety, durability and economy. The plan upon which they are made effectually secures them from corrosion in the interior, as well as the exterior of the rope, and gives a greater compactness and elasticity than is found in any other manufacture.

Many of these ropes have been in constant operation in the different mines in England, and on the Blackwall and other inclined planes, for three and four years, and are still in good condition.

They have been applied to almost every purpose for which hempen ropes have been used—mines, heavy cranes, standing rigging, window cords, lightning conductors, signal halyards, tiller ropes, etc. Reference is made to the annexed statement for the relative strength and size. Testimonials from the most eminent engineers in England can be shown as to their efficiency, and any additional information required respecting the different descriptions and application will be given by

ALFRED L. KEMP,

75 Broad street, New York, sole agent in the United States.

Statement of Trial made at the Woolwich Royal Dock Yard, of the Patent Wire Ropes, as compared with Hempen Ropes and Iron Chains of the same strength.—October, 1841.

WIRE ROPES.			HEMPEN ROPES.			CHAINS.			STRENGTH Tons.
Wire gauge number.	Circumference of rope.	Weight per fathom.	Circumference of rope.	Weight per fathom.		Weight per fathom.	Diameter of iron.		
	INCH.	LBS. OZ.	INCH.	LBS. OZ.		LBS.	INCH.		
11	4½	13 5	10	21 -		50	15-16		20
13	3½	8 3	8½	16 -		27	11-16		13½
14	3½	6 11	7½	12 8		17	9-16		10½
15	2½	5 9	6½	9 4		13½	1-3		7½
16	2½	4 3	6	8 8		10½	7-16		7

N.B. The working load, with a perpendicular lift, may be taken at 6 cwt. for every lb. weight per fathom, so that a rope weighing 5 lbs. per fathom would safely lift 3360 lbs., and so on in proportion. 1y24

**RAILROAD SCALES.—THE ATTENTION** of Railroad Companies is particularly requested to Ellicott's Scales, made for weighing loaded cars in trains, or singly, they have been the inventors, and the first to make platform scales in the United States; supposing that an experience of 20 years has given a knowledge and superior advantage in the business.

The levers of our scales are made of wrought iron, all the bearers and fulcrums are made of the best cast steel, laid on blocks of granite, extending across the pit, the upper part of the scale only being made of wood. E. Ellicott has made the largest Railroad Scale in the world, its extreme length was one hundred and twenty feet, capable of weighing ten loaded cars at a single draft. It was put on the Mine Hill and Schuylkill Haven Railroad.

We are prepared to make scales of any size to weigh from five pounds to two hundred tons.

ELLICOTT & ABBOTT.

Factory, 9th street, near Coates, cor. Melon st.  
Office, No. 3 North 5th street,  
Philadelphia, Pa.

1y35

**NICOLL'S PATENT SAFETY SWITCH** for Railroad Turnouts. This invention, for some time in successful operation on one of the principal railroads in the country, effectually prevents engines and their trains from running off the track at a switch, left wrong by accident or design.

It acts independently of the main track rails, being laid down, or removed, without cutting or displacing them.

It is never touched by passing trains, except when in use, preventing their running off the track. It is simple in its construction and operation, requiring only two Castings and two Rails; the latter, even if much worn or used, not objectionable.

Working Models of the Safety Switch may be seen at Messrs. Davenport and Bridges, Cambridgeport, Mass., and at the office of the Railroad Journal, New York.

Plans, Specifications, and all information obtained on application to the Subscriber, Inventor, and Patentee  
G. A. NICOLLS,  
Reading, Pa.

ja45

**THE SUBSCRIBERS, AGENTS FOR** the sale of

Codorus, Glendon, Spring M.I. and Valley, Pig Iron.

Have now a supply, and respectfully solicit the patronage of persons engaged in the making of Machinery, for which purpose the above makes of Pig Iron are particularly adapted.

They are also sole Agents for Watson's celebrated Fire Bricks and prepared Kaolin or Fire Clay orders for which are promptly supplied.

SAM'L KIMBER, & CO.,

59 North Wharves,

Jan. 14, 1846.

[1y4]

Philadelphia, Pa.

**TO RAILROAD COMPANIES AND MANUFACTURERS** of railroad Machinery. The subscribers have for sale Am. and English bar iron, of all sizes; English blister, cast, shear and spring steel; Juniata rods; car axles, made of double refined iron; sheet and boiler iron, cut to pattern; tiers for locomotive engines, and other railroad carriage wheels, made from common and double refined B. O. iron; the latter a very superior article. The tires are made by Messrs. Baldwin & Whitney, locomotive engine manufacturers of this city. Orders addressed to them, or to us, will be promptly executed.

When the exact diameter of the wheel is stated in the order, a fit to those wheels is guaranteed, saving to the purchaser the expense of turning them out inside.

THOMAS & EDMUND GEORGE,

245 N. E. cor. 12th and Market sts., Philad., Pa.

**TO LOCOMOTIVE AND MARINE ENGINE BOILER BUILDERS.** Pascal Iron Works, Philadelphia. Welded Wrought Iron Flues, suitable for Locomotives, Marine and other Steam Engine Boilers, from 2 to 5 inches in diameter. Also, Pipes for Gas, Steam and other purposes; extra strong Tube for Hydraulic Presses; Hollow Pistons for Pumps of Steam Engines, etc. Manufacture and for sale by

MORRIS TASKER & MORRIS,

Warhouse S. E. corner 3d and Walnut Sts., Philadelphia.

**THE SUBSCRIBER IS PREPARED TO** execute at the Trenton Iron Works, orders for Railroad Iron of any required pattern, and warranted equal in every respect in point of quality to the best American or imported Rails. Also on hand and made to order, Bar Iron, Braziers' and Wire Rods, etc., etc.

PETER COOPER 17 Burling Slip.

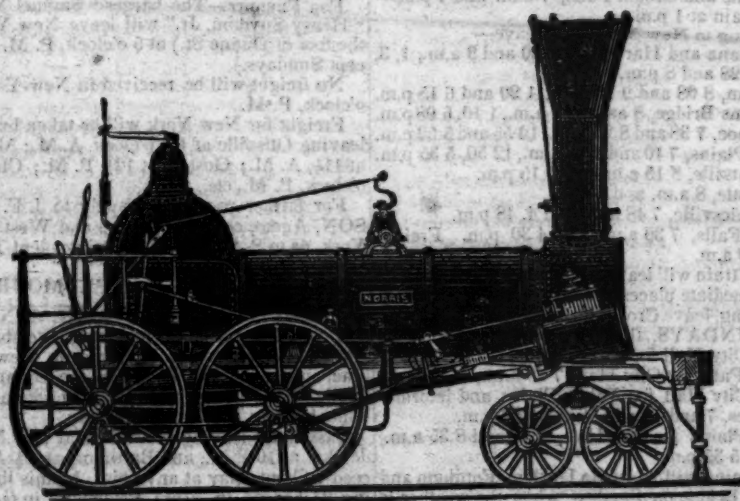
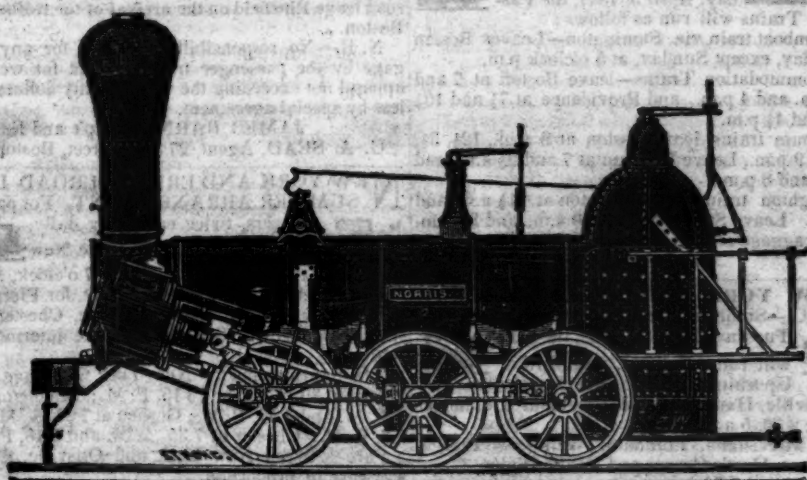
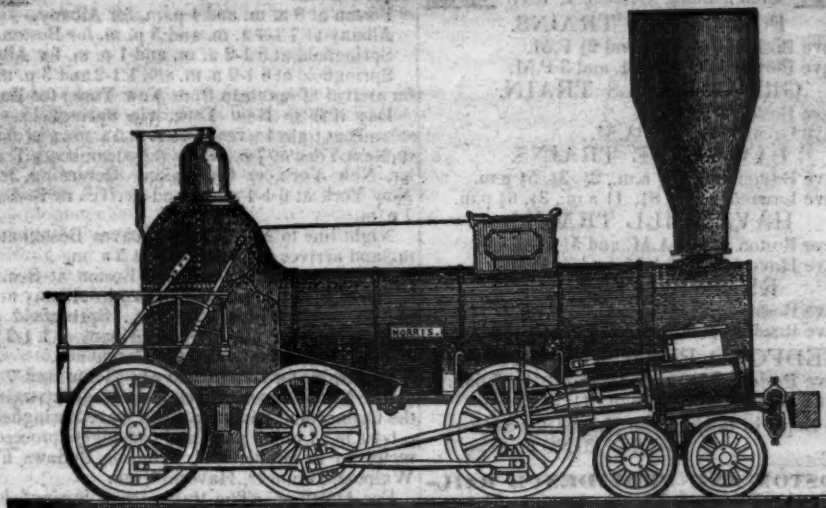
New York.

1y10



# NORRIS' LOCOMOTIVE WORKS.

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**MANUFACTURE**, to order Locomotive Steam Engines of every plan or size. Their shops being enlarged, and their arrangements considerably extended to facilitate the speedy execution of work in this branch, they can offer to Railway Companies unusual advantages for prompt delivery of Machinery of superior workmanship and finish.

Connected with the Locomotive business, they are also prepared to furnish, at short notice, Chilled Wheels for Cars of superior quality.

Iron and Brass castings, Axles, etc., fitted up complete with Trucks or otherwise.

**L**AP-WELDED WROUGHT IRON TUBES for Tubular Boilers, from 1 1/2 to 15 inches diameter, and any length not exceeding 17 feet—manufactured by the Caledonian Tube Company, Glasgow, and for sale by

IRVING VAN WART,  
12 Platt street, New York.

JOB CUTLER, Patentes.

These Tubes are extensively used by the British Government, and by the principal Engineers and Steam Marine and Railway Companies in the Kingdom.

**S**PRING STEEL FOR LOCOMOTIVES, Tenders and Cars. The Subscriber is engaged in manufacturing Spring Steel from 1 1/2 to 6 inches in width, and of any thickness required; large quantities are yearly furnished for railroad purposes, and wherever used, its quality has been approved of. The establishment being large, can execute orders with great promptitude, at reasonable prices, and the quality warranted. Address

JOAN F. WINSLOW, Agent,  
Albany Iron and Nail Works,

**T**HE SUBSCRIBERS ARE PREPARED TO execute orders at their Phoenix Works for Railroad Iron of any required pattern, equal in quality and finish to the best imported.

REEVES, BUCK & CO.,  
Philadelphia.  
ROBERT NICHOLS, Agent,  
No. 79 Water St., New York.

**P**ATENT INDESTRUCTIBLE WATER Pipes. The subscribers continue to manufacture the above Pipes, of all the sizes and strength required for City or Country use, and would invite individuals or companies to examine its merits. This pipe, unlike cast iron and lead, imparts neither color, oxide or taste, being formed of strongly riveted sheet iron, and evenly lined on the inside with hydraulic cement. While in the process of laying, it has a thick covering externally of the same—thus forming nature's own conduit of stone. The iron being thoroughly encased on both sides with cement, precludes the possibility of rust or decay, and renders the pipe truly indestructible. The prices are less than those of iron or lead. We also manufacture Basins and D. Traps, for Water Closets, on a new principle, which we wish the public to examine at 112 Fulton street, New York.

J. BALL & CO.

**K**EARNEY FIRE BRICK. F. W. BRINLEY, Manufacturer, Perth Amboy, N. J. Guaranteed equal to any, either domestic or foreign. Any shape or size made to order. Terms, mod. from delivery of brick on board. Refer to

James P. Allaire, New York.  
Peter Cooper, New York.  
Murdock, Leavitt & Co., New York.  
J. Triplett & Son, Richmond, Va.  
J. R. Anderson, Tredegar Iron Works, Richmond, Va.  
J. Patton, Jr., Philadelphia, Pa.  
Colwell & Co., Philadelphia, Pa.  
J. M. L. & W. H. Scovill, Waterbury, Conn.  
N. E. Screw Co., Providence, R. I.  
Eagle Screw Co., Providence, R. I.  
William Parker, Supt. Bost. and Wore. R. R.  
New Jersey Malleable Iron Co., Newark, N. J.  
Gardner, Harrison & Co. Newark, N. J.  
25,000 to 30,000 made weekly.

**PATERSON RAILROAD**  
Summer Arrangement.  
Commencing April 20th, 1847, the cars will leave  
Paterson at New York at  
8 o'clock a.m. 9 1/2 o'clock a.m.  
11 1/2 o'clock a.m. 12 1/4 o'clock p.m.  
4 o'clock p.m. 5 1/2 o'clock p.m.  
On Sunday.  
8 o'clock a.m. 9 1/2 o'clock a.m.  
4 o'clock p.m. 5 1/2 o'clock p.m.  
Office 75 Courtlandt St.







days only at 10 p.m.—being a continuation of the line from New York.



# PHILADELPHIA AND READING RAILROAD.—Passenger Train Arrangement for 1847.

A Passenger Train will leave Philadelphia and Pottsville daily, except Sundays, at 9 o'clock A. M.

The Train from Philadelphia arrives at Reading at 12 18 M.

The Train from Pottsville arrives at Reading at 10 43 A. M.

Fares.	Miles.	No. 1.	No. 2.
Between Phila. and Pottsville, 92		\$3.50 and	\$3.00
Reading, 58		2.25 and	1.90
" Pottsville, 34		1.40 and	1.30

Five minutes allowed at Reading; and three at other way stations.

Passenger Depot in Philadelphia corner of Broad and Vine streets.

# PHILADELPHIA, WILMINGTON & BALTIMORE RAILROAD.—1847.

Summer Arrangement.

Philadelphia for Baltimore, 8 a.m. and 10 p.m.

Baltimore for Philadelphia, 9 a.m. and 8 p.m.

Connecting with Mail Lines North, South & West.

On Sundays, only the 10 P. M. Lines run.

The Boat Lines, via Newcastle & Frenchtown R.R. Leave Philadelphia at 3 p.m. No line on Sun.

Leave Baltimore at 3 p.m. day.

Accommodation Trains between Philadelphia & Wilmington.—Philadelphia to Wilmington, 8 a.m., mail, 12 p.m., 4 p.m., 7 p.m., 10 p.m. mail. Wil-

mington to Philadelphia, 7 a.m., 1 p.m., mail, 4 p.m., 7 p.m., 12 a.m., night mail.

J. R. TRIMBLE, Engineer and General Superintendent.

# GEORGIA RAILROAD. FROM AUGUSTA TO ATLANTA—171 MILES.

AND WESTERN AND ATLANTIC RAILROAD FROM ATLANTA TO DALTON, 100 MILES.

This Road in connection with the South Carolina Railroad and Western and Atlantic Railroad now forms a continuous line, 408 miles in length, from Charleston to Dalton (Cross Plains) in Murray county, Ga.—39 miles from Chattanooga, Tenn.

	Between Augusta and Dalton.	Between Charleston and Dalton.
	271 miles.	408 miles.

# RATES OF FREIGHT.

	Between Augusta and Dalton.	Between Charleston and Dalton.
1st class. Boxes of Hats, Bonnets, and Furniture, per cubic foot.	\$0 18	\$0 28
2d class. Boxes and Bales of Dry Goods, Saddlery, Glass, Paints, Drugs and Confectionary, per 100 lbs.	1 00	1 50
3d class. Sugar, Coffee, Liquor, Bagging, Rope, Cotton Yarns, Tobacco, Leather, Hides, Copper, Tin, Feathers, Sheet Iron, Hollow Ware, Castings, Crockery, etc.	0 60	0 85
4th class. Flour, Rice, Bacon, Pork, Beef, Fish, Lard, Tallow, Beeswax, Bar Iron, Ginseng, Mill Gearing, Pig Iron, and Grindstones, etc.	0 40	0 65
Cotton, per 100 lbs.	0 45	0 70
Molasses, per hogshead.	8 50	13 50
" " barrel.	2 50	4 25
Salt per bushel.	0 18	
Salt per Liverpool sack.	0 65	
Ploughs, Corn Shellers, Cultivators, Straw Cutters, Wheelbarrows.	0 75	1 50

German or other emigrants, in lots of 20 or more, will be carried over the above roads at 2 cents per mile.

Goods consigned to S. C. Railroad Co. will be forwarded free of commissions. Freight payable at station.

F. C. ARMS, Supt. of Transportation.

Augusta, Ga., July 15, 1847.

# RATES OF FREIGHT

On CHANDLER'S Through Transportation Line, between Charleston, S. C., or Savannah, Ga., and Decatur, Ala., and Knoxville, Tenn., and all intermediate points on the Tennessee River, viz:

Between Mecon and Decatur and intermediate points.	0 22 1/2	1 54	1 05	0 81	0 86
and Knoxville & intermediate points.	0 22 1/2	1 54	1 10	0 76	0 80
and Chattanooga.				0 61	0 90
Between Augusta and Decatur and intermediate points.	\$0 24	1 70	1 15	0 85	0 90
and Knoxville & intermediate points.	\$0 24	1 70	1 20	0 80	0 90
and Chattanooga.				0 65	1 10
Between Charleston or Savannah and Decatur and intermediate points.	\$0 32	2 20	1 35	1 05	1 10
and Knoxville & intermediate points.	\$0 32	2 20	1 40	1 00	1 10
and Chattanooga.				0 85	

1st class.—Boxes of Hats, Bonnets and Furniture per foot.	
2d class.—Boxes and Bales of Dry Goods, Shoes, Saddlery, Glasses, Paints, Oils, (in cans) Drugs, Confectionaries, Shovels, Spades, Scythes, Smiths' Bellows, Baskets, Tub, Sifters, Brooms and other light articles, per 100 lbs.	
3d class.—Molasses, Sugar, Coffee, Liquor, Bagging, Rope, Cheese, Tobacco, Leather, Feathers, Hides, Wool, Copper, Tin, Sheet-iron, Nails, Casks, or Crates of Crockery, Hardware, and other heavy articles not enumerated below.	
4th class.—Flour, Bacon, (in casks or boxes) Pork, Beef, Lard, Tallow, Butter, Beeswax, Bales of Rags, Ginseng, Green and Dried Fruit, (in casks or sacks) Pig-iron and Limestone Oil, per 100 lbs.	
Per 100 lbs.	
Cotton.	

Merchandise shipped from any of the northern ports, must be consigned to R. R. AGENT, CHARLESTON, S. C., or R. R. AGENT, SAVANNAH, GA.: and every package must be marked, care of B. CHANDLER, Chattanooga.

Charges will accompany the goods, and be collected by the boats on the Tennessee river, when delivered to the owner or consignee.

No preference in the way of despatch, will be given to any produce intended for their line, but each lot will be sent off as it is received.

The warehouse of the undersigned will be enlarged during the summer, and an apparatus attached for hoisting or lowering freight to the river, without soil or injury.

He will have a train of wagons under his entire control, sufficient to conduct the fall business with great despatch.

B. CHANDLER.

Chattanooga, Tenn., July 1, 1847.

# REGULAR RATES BETWEEN ATLANTA AND CHARLESTON OR SAVANNAH.

First class, per foot.	\$0 20
Second class, per 100 lbs.	1 20
Cotton, per 100 lbs.	0 55
Third class, per 100 lbs.	0 60
Fourth class, per 100 lbs.	0 50

# FRANKLIN HOUSE,

No. 105 Chestnut Street, Philadelphia.

The undersigned takes the liberty of calling the attention of the readers of the Journal to the fact that the Office is removed from New York to the FRANKLIN HOUSE, Philadelphia, where he will be always pleased to meet and greet them. They will not only find a pleasant Reading Room, with lots of foreign periodicals, treating of Railroads and Machinery, but they will always find good-sized and airy rooms—clean beds—and a well supplied table. If they would have further proof of this, they have only to call, and judge for themselves, and much oblige the proprietor,

D. K. MINOR.

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# AMERICAN RAILROAD JOURNAL.

OFFICE AT THE FRANKLIN HOUSE, 105 Chestnut Street,

PHILADELPHIA, PA.

This is the only periodical having a general circulation throughout the Union, in which all matters connected with public works can be brought to the notice of all persons in any way interested in these undertakings. Hence it offers peculiar advantages for advertising times of departure, rates of fare and freight, improvements in machinery, materials, as iron, timber, stone, cement, etc. It is also the best medium for advertising contracts, and placing the merits of new undertakings fairly before the public.

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